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LONG RANGE PLANNING

PREPARED FOR THE
SUBCOMMITTEE ON THE ENVIRONMENT
AND THE ATMOSPHERE

OF THE
COMMITTEE ON
SCIENCE AND TECHNOLOGY
U.S. HOUSE OF REPRESENTATIVES
NINETY-FOURTH CONGRESS

SECOND SESSION

BY THE
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MAY 1976

Printed for the use of the Committee on Science and Technology

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LETTER OF TRANSMITTAL

Honorable Olin E. Teague
 Chairman
 Committee on Science and Technology
 U. S. House of Representatives
 Washington, D. C.

Dear Mr. Chairman:

I am transmitting herewith a report prepared by the Congressional Research Service pursuant to a joint request by myself and Representative Robert Leggett, Chairman, Subcommittee on Fisheries and Wildlife Conservation and the Environment, Committee on Merchant Marine and Fisheries.

The Fisheries and Wildlife Conservation and the Environment Subcommittee joined with our Environment and Atmosphere Subcommittee on July 31, 1975, concerning a study of the need for legislation to improve long-term Federal policy planning. The study is being jointly performed by the General Accounting Office and the Congressional Research Service.

The long-range planning activities of selected key Federal agencies and several private institutions are being examined and evaluated. In addition, the multi-phased work effort has been designed to compare and analyze selected models of structures, processes, and mechanisms for long-range policy planning in Government as well as to evaluate selected forecasting methodologies used to identify future issues.

This study is an outgrowth of several House bills which address the need for objective and impartial long-term strategic policy analysis and development of alternative solutions. For example, my Subcommittee held five days of hearings on H.R. 35, the Environmental Research Centers bill, which is concerned with the same broad objectives as embodied in this study. Although the respective bills have emphasized specific environmental and science policy information needs, the GAO-CRS study is broader in scope.

The two Subcommittees had a joint briefing on the progress of this study on March 31. Congressman Robert Leggett, Chairman of the Fisheries and Wildlife Conservation and the Environment Subcommittee, and I are planning to hold joint oversight hearings in May

IV

Chairman Teague
April 23, 1976

Page Two

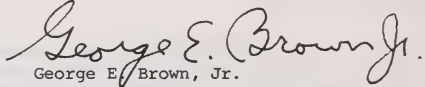
to receive testimony of witnesses who will be invited to submit their recommendations and suggestions.

The purpose of this document is to provide working background papers for the May hearings. I have found that preparation of such background papers facilitates the hearings by informing Members of the broad framework of previous work in the area. Such a paper also aids witnesses in preparing their testimony.

Reports of the GAO portion of the study will be printed by the Merchant Marine and Fisheries Committee.

Mr. Chairman, I commend this report to you and other Members of our Committee.

Sincerely,

A handwritten signature in dark ink, reading "George E. Brown, Jr." in a cursive style.

George E. Brown, Jr.
Chairman, Subcommittee on the
Environment and the Atmosphere

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LETTER OF SUBMITTAL

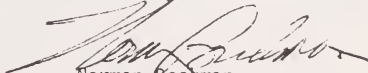
Honorable George Brown, Chairman
Subcommittee on Environment
and the Atmosphere
Committee on Science and Technology
U.S. House of Representatives
Washington, D.C. 20515

Dear Mr. Chairman:

I am pleased to transmit to you this report entitled "A Review of Long-Range Planning Institutions," which was prepared by the Congressional Research Service pursuant to a joint request from you and from Rep. Robert Leggett, Chairman, Subcommittee on Fisheries and Wildlife Conservation and the Environment, Committee on Merchant Marine and Fisheries, U.S. House of Representatives.

The report is a compilation of four studies. The first, prepared by Susan R. Abbassi of the Environmental Policy and Natural Resources Division, is a survey of significant proposals for the creation of institutions for environmental research and planning. The second, prepared by Clay H. Wellborn and John Ridley of the Government Division, presents a comparative analysis of historical and proposed institutions for improving the capacity of the Federal Government to conduct long-range, comprehensive policy planning and strategic assessment. The third study, which was prepared by Clay H. Wellborn, discusses selected aspects of long-range planning in the private sector and assesses the implications of corporate planning for long-range planning in the Federal Government. The fourth study, prepared by Dennis L. Little, Marvin Kornbluh, William L. Renfro and Keith Alan Bea of the CRS Futures Research Group, reviews the role of forecasting in long-range planning.

Sincerely,


Norman Beckman
Acting Director

Enclosure



CONTENTS

	Page No.
Letter of Transmittal	iii
Letter of Submittal	v
TABLE OF CONTENTS	vii
INTRODUCTION	2
The Planning Issue	4
Selected Arguments in Favor of Long-Range Planning	6
Selected Arguments Against Long-Range Planning	7
Purpose of this Document	8
SURVEY OF INSTITUTIONAL APPROACHES TO ENVIRONMENTAL RESEARCH AND PLANNING	10
Introduction	11
National Environmental Policy Institute	13
National Environmental Laboratories	26
Regional or State Environmental Centers	37
National Environmental Data System	46
Council on Environmental Quality and the Office of Environmental Quality	53
General Summary	62
Bibliography	64
Summary Table: Major Institutional Proposals for Environmental Planning or Research	67
COMPARATIVE ANALYSIS OF SELECTED ORGANIZATIONAL ARRANGEMENTS FOR LONG-RANGE PLANNING AND STRATEGIC ASSESSMENT IN THE FEDERAL GOVERNMENT	70
Background	71
Framework for the Analysis	73
National Resources Planning Board	76
Tugwell Proposal for a New Constitution	82
Institute for Congress	90
Office for Strategic Policy Assessment	95
Balanced National Growth and Development Act of 1974 (S. 3050, 93d Congr.)	98
Balanced Growth and Economic Planning Act of 1975 (S. 1975, 94th Congr.)	108
Balanced Economic Growth Act (H.R. 1037, 94th Congr.)	116
Summary of Some Fundamental Issues	121
LONG-RANGE PLANNING IN THE PRIVATE SECTOR	125
Introduction	126
Planning and Action	129
Types of Corporate Planning	132
Organization for Planning	134
Corporate Responses to Subcommittee Questions	145

(VIII)

TABLE OF CONTENTS, Continued

Implications of Corporate Planning Approaches for Planning in the Federal Government	145
Appendices	following 162
I. Forms of Corporate Planning: Alternative Approaches to Classification.....	163
II. Written Statements Submitted to the Subcommittee by Corporate Respondants.....	171
III. Selected Examples of Corporate Planning Manuals.....	310
IV. Congressional Seminar on Corporate Planning: Agenda, Participants, and Summary of Proceedings	358
FORECASTING AND FUTURES RESEARCH	381
Introduction	382
History of Forecasting	384
Selected Forecasting Methodologies	391
Introduction	391
The Delphi	392
Cross Impact Analysis	404
Scenarios	419
Trend Extrapolation	434
Trend Impact Analysis	444
Computer Simulation Modeling	453
Methodological Annex	466
Appendix: Some Forecasts That Have Not Come True--Fortunately..	474



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A REVIEW OF LONG-RANGE
PLANNING INSTITUTIONS

A study prepared in response to a request by the Chairman,
Subcommittee on Fisheries and Wildlife Conservation and
the Environment, House Committee on Merchant Marine and
Fisheries, and the Chairman, Subcommittee on Environment
and the Atmosphere, House Committee on Science and Technology

by

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Dennis L. Little

William L. Renfro

Marcia Smith

Clay H. Wellborn

John Ridley

March 16, 1976

(1)

I N T R O D U C T I O N

INTRODUCTION

This document, which is a compilation of four studies prepared by the Congressional Research Service at the joint request of the Chairman of the Subcommittee on Environment and the Atmosphere of the House Committee on Science and Technology, and the Chairman of the Subcommittee on Fisheries and Wildlife Conservation and the Environment of the House Committee on Merchant Marine and Fisheries, is one in a series of Congressional documents dealing with the problem of long-range planning and strategic policy assessment in the Federal Government.

There are increasingly frequent calls both in and out of Congress for the Federal Government to expand its policy planning horizons beyond short-term immediate problems and to consider long-term issues, issues that demand decisions which, although taken today, will shape the future social, economic, and physical environment of our nation. Many observers assert that although we generally recognize that today's decisions shape our future, we do not have adequate governmental capacity to systematically assess the future implications of present trends or to design and evaluate alternate courses of action to avoid future problems or to realize future opportunities.

Congressional interest in strengthening Governmental capacities for dealing with the future can be seen in the Legislative Reorganization Act of 1970, which augmented the policy analysis and program evaluation mandates of the Congressional Research Service and the General Accounting Office, and which stressed the need for a futures orientation in assessing legislation. The continuing Congressional interest can be seen as well in the creation

of the Office of Technology Assessment and in the new Congressional budget process. Proposals for further improvements continue to be made. Legislation has been introduced in both houses of Congress to establish an economic planning capability in the Federal Government. There are also legislative proposals before the Congress to establish an institution for environmental planning and to establish an Office of Regulatory Policy Oversight. Also introduced in legislative form have been proposals to establish a process for formulating balanced national growth and development policy and to create a Department of Social, Economic, and Natural Resources Planning; and the Senate Committee on Government Operations has recently conducted a symposium to discuss the need for improved processes to set national goals and objectives and to devise policies and programs to pursue those goals and objectives. Although each of the legislative proposals must be judged on its own merits, the increasing Congressional attention to the problem of national planning, strategic policy assessment, and the establishment of national goals and objectives is a clear indication that national long-range planning is a public issue surfacing for debate.

The Planning Issue

Current proposals to establish improved policy planning processes in the Federal Government have been formulated in response to a variety of perceived societal problems. The proposals do not call for the creation of static, inflexible national plans that would be blueprints for controlling all important aspects of national life and activity. Those that call for some form of plan, whether expressed as a set of targets or

through the use of maps to guide physical development, provide for frequent and regular revision and updating. The emphasis of the proposals is to improve the planning process through which national decisions with long-range implications are made, not to prepare cast-in-concrete master plans.

The classic model of rational, comprehensive planning includes the following elements:

1. Identification of goals and objectives;
2. Design of alternative policies and courses of action to achieve the objectives;
3. Assessment of the costs and benefits of each alternative in terms of the primary objectives and in terms of secondary effects—both short and long term;
4. Selection of the most desirable policy or course of action;
5. Implementation of the selected policy or course of action; and
6. Monitoring the results, and evaluating progress toward the stated objectives, with alertness for unexpected secondary impacts.

This classic model leaves out some important elements, however. It does not include the functions of (1) foresight, which consists of continually scanning the national and international situation to recognize signs of potential problems or opportunities, and (2) using the full range of forecasting techniques to project possible future adverse consequences of current policies and trends.

The planning issue is far from being non-controversial. Recent legislative proposals have generated strong reactions in their favor

and in opposition. Although this is not the appropriate place for a full discussion of the pros and cons of long-range national planning, some of the central elements of the arguments on both sides of the planning issue should be mentioned.

Selected Arguments in Favor of Long-Range Governmental Planning

Although there are many day-to-day problems for which policies and governmental actions must be devised and for which short-term decisions must be made, many of the crucial issues that require decisions today have implications for the future. Careful long-range planning and assessment of these future impacts are required if we are to avoid serious, if not catastrophic, difficulties in the future.

Establishing national goals and objectives is essential if we as a nation are to grow and develop in ways that will ensure a satisfying quality of life for ourselves and our posterity. At present we have no way to develop and analyze alternative national goals and objectives. Our policy making processes therefore lead to conflicting and overlapping governmental actions. Long-range planning is required to help us clarify national goals and objectives, to design sets of goals and objectives that are attainable, and to provide the basis for more rational governmental decision making.

The free market is a well-recognized mechanism for the rational allocation of scarce resources among competing uses, but in spite of its virtues it has its imperfections. Among these imperfections are its inability to handle the problems of indivisibilities and externalities. Because of its imperfections, some form of intervention in the operation

is often required for the satisfaction of social needs. Such intervention, be it in the form of governmental programs or governmental regulatory activity (already part of the American governmental system), must be carefully planned if the desired ends are to be met.

The Federal Government operates through many different agencies, each with its own mission. Often the activities of these agencies can operate in mutual support to achieve social purposes; but they can often conflict to impede the achievement of those purposes. Planning is required to achieve interagency coordination to ensure that mutual support is the rule rather than conflict.

Selected Arguments Against Long-Range Governmental Planning

Opponents of national planning assert that governmental planning and tampering with the operation of the free market has led to major inefficiencies in the economies of this and other nations. Large scale, long-term national planning, insofar as plans are implemented, must so distort the market system as to make it worthless as a guide to relative value and distribution of goods and services.

Opponents also argue that national planning has not worked. The experience of some socialist countries, where planning was substituted for the free market, is leading them to gradually reintroduce the use of competition and the profit motive—basic elements of the market system—to improve the efficiency of their economic systems and to stimulate the production of a wider variety of goods and services. In the United States during the New Deal era, national planning and the associated governmental intervention in the socio-economic system of the nation by way of now-dismantled New

Deal bureaucracies allegedly demonstrated the unsatisfactory nature of national planning. It simply did not work, its detractors assert.

Governmental agencies have their individual mandates, their individual missions. Sometimes these are defined in terms of function, sometimes in terms of service to specified sectors of American society. If the output of national planning is to be implementable, the entire structure of the bureaucracy would probably require radical redesign, as would the committee structure of Congress. Such redesign would probably be so disruptive that any expected benefits of national planning would not be realized.

The foregoing arguments against national planning aside, the ideal of comprehensive, rational policy planning sets a standard that is not achievable. Though policy decisions must always be made with a view toward their future impacts, we do not sufficiently understand the dynamics of our complex socio-economic system to identify the ways it responds to changing public policies. Our forecasting techniques, though promising and often helpful, are not entirely adequate as bases for long-term, large-scale public commitments, planning opponents would argue. We can at best deal with problems as they arise or as we foresee the probability of their arising. These human limitations, together with the pluralistic nature of American society, with its constitutional limitations on centralized governmental powers, require that our public policy decisions be made in an incremental, largely decentralized, and problem-preventing and problem-solving system.

Purpose of This Document

The studies compiled in this document are not aimed at resolving the conflicts between the pro-planning arguments and the anti-planning arguments.

Strong cases can be made on both sides of the issue. These studies do not address the issue of whether, or to what degree, planning at the national level is desirable. The function of the document is not to advocate in favor or or against national planning. Rather it describes a number of the potential alternative approaches that might be worthy of Congressional consideration. It also reviews a number of long-range forecasting tools that may be of use in coming to grips with major long-range national policy problems and opportunities.

SURVEY OF INSTITUTIONAL APPROACHES TO
ENVIRONMENTAL RESEARCH
AND PLANNING

INTRODUCTION

Since the surge of interest in environmental problems which occurred in the late 1960's, the issue of organizing to produce or facilitate environmental planning and research has been the focus of much concern, especially with respect to the need for long-range perspective in these areas. During 1968 and 1969, the years in which the National Environmental Policy Act was debated and passed, several major studies were done on the question of institutional needs in environmental planning or research. The inadequacy of the current organizational framework was a recurrent theme in these reports.

Among these was the study of the Environmental Study Group of the Environmental Studies Board of the National Academy of Sciences, with its resulting report, "Institutions for Effective Management of the Environment," issued in January 1970. */ It recommended a five-pronged institutional approach, including a policy-oriented Institute for Environmental Studies, a Board of Environmental Affairs much like the present Council on Environmental Quality, a Joint Committee on the Environment in the Congress, a Federal monitoring and data program, and National Laboratory for the Environmental Sciences. The Ecological Society of America issued a report entitled "National Institute of Ecology: An Inquiry" which also recommended similar institutional approaches. **/

*/ National Academy of Sciences, Environmental Study Group of the Environmental Studies Board. "Institutions for Effective Management of the Environment." National Academy of Sciences /National Academy of Engineering. Washington, D. C. January, 1970.

**/ Ecological Society of America and Peat, Marwick, Mitchell and Company. "National Institute of Ecology: An Inquiry." A study supported by a National Science Foundation Grant. March 25, 1970.

Most of these institutional approaches were embodied in proposals that were forwarded in the early 1970's. These proposals include such concepts as a policy oriented environmental studies institute; national environmental laboratories; university-associated State and regional environmental centers; foundation-Government institutes; and a national data bank system. This interest in better organizational approaches was evidenced in 1970 in the establishment of the Council on Environmental Quality (CEQ) in the National Environmental Policy Act (NEPA), the creation of the Environmental Protection Agency (EPA) by reorganization plan, and the consolidation of scientific and data-gathering functions, also by reorganization plan in the National Oceanic and Atmospheric Administration (NOAA).

Both the several proposals and the establishment of these environmental entities sprang up at roughly the same time. Some overlapping of goals occurred, but the proposals described in this report are representative of the basic concepts advanced along these lines, and were perceived by their proponents as separate efforts which could productively co-exist.

In all cases, the necessity for long-range planning which would avoid the piecemeal responses of past environmental policies and laws was integral to the purpose of the institutional approaches under discussion. The environmental awareness of the late 1960's brought forth a new realization of the pervasiveness of environmental problems -- and with it, the realization that effective policies could only be born and carried out in institutions with the capability to look beyond the moment. Such institutions were seen to need both excellent data gathering capacity and a comprehensive perspective, in order to bring these to bear on policies which would have lasting effectiveness in solving existing environmental difficulties and avoiding future ones.

NATIONAL ENVIRONMENTAL POLICY INSTITUTEThe Concept

The concept of an institute for environmental studies and policy analysis which would be independent of direct Government control, yet linked to the Federal establishment by both personnel and financial involvement, originated early in both the academic and Administration discussions of how to create the necessary organizational structure for meeting the newly perceived environmental crisis. It was a key component of the National Academy of Sciences (NAS) study on "Institutions for Effective Management of the Environment," and very nearly was established by administrative action. Failing this, it was embodied in legislation introduced in the 92nd, 93rd, and 94th Congresses, and has been the subject of hearings.

As proposed in this legislation, the non-profit Institute would be incorporated by the Director of the National Science Foundation, the Chairman of the Council on Environmental Quality, the Administrator of the Environmental Protection Agency, and the Chairman of the Board of Directors of the Inter-American Institute of Ecology.

It would have an eleven-member Board of Directors, including the incorporators, two members appointed by the President with advice and consent of the Senate, with expertise in environmental problems, and five members appointed by the Comptroller General with advice and consent of the Senate, to represent respectively interests of environmental expertise, consumer affairs, labor, industry, and technology assessment or systems analysis. A President of the Institute would be selected by the Board, with such other officers as would be required. Between 200 and 300 professionals

would be expected to staff the Institute, with backgrounds in various physical and social science disciplines.

Funding of the Institute would be approved in the legislation at the rate of \$10 million each year for five years, with matching funds available for amounts received from non-Federal sources up to \$5 million for each year.

A key characteristic of the Institute was to be its independence of both Government and private enterprise in its policies and decision-making.

The "Findings" section of the proposed legislation states:

(1) There is a need for objective and impartial strategic policy analysis, including a broad program of research and for the identification and development of alternative solutions to existing and emerging environmental problems, to be conducted by an appropriate institute which is independent of government and private enterprise;

(2) such an institute should be the center for systematic environmental problem solving and policy-oriented research conducted on a broad, interdisciplinary basis;

(3) such an institute should be available to local, State, and Federal governmental agencies and the Congress to assist in the assessment, development, and presentation of policy alternatives, but should have the freedom and independence to extend its studies to matters other than those specified by its governmental sponsors; and

(4) it is a responsibility of the Federal Government, in conjunction with appropriate charitable foundations, to establish, assist, encourage, and assist in the funding of such an independent institute. ¹*/

The Institute would have these duties:

- development and analysis of policy alternatives for dealing with the environmental problems, using a systematic interdisciplinary approach
- identification and development of methods and procedures through which presently unquantifiable environmental values may be given consideration in policy evaluation;
- making advice and information it developed available to Congress, and to other government agencies;

*/ H.R. 14468 of the 93rd Congress, Sec. 302 (b).

- undertaking contract studies for Federal agencies which involve problems of environmental policy analysis of regional or national significance;
- identifying areas where additional environmental research and data collection are needed; and reviewing on a continuing basis the national capability and programs in technology assessment;
- supporting laboratory research and the biome modeling and synthesis research programs of the Institute of Ecology.

The basic rationale for an independent entity such as this was based on the statement in the "Findings" section of the bill that "as presently constituted, local, State and Federal governments do not have an adequate capacity to analyze, integrate, and evaluate the growing body of environmental research now underway," nor do they have the capacity for development of new or restructured governmental policies and programs for environmental concerns; further it states: "there are no existing independent, nongovernmental institutions capable of adequately performing these functions in an objective and comprehensive manner on a full-time basis."

Upon introducing the bill (H.R. 14468) in the 93rd Congress, Congressman John Dingell explained that its purpose was to provide a forum for developing national long-term strategies; to stand back from day-to-day issues and project issues coming in the more distant future. For example, he said, the Environmental Institute would have been able to predict much about the dimensions of the energy crisis before it happened.

The key issue in designing such an Institute, Mr. Dingell noted, is to make it independent enough to be credible while being close enough to the decision-making process to be relevant. His bill, H.R. 14468, would have

created the federally chartered corporation described above. All its studies would be made public, and it would prepare an annual report.

History and Progress of the Institute Concept

The background of the policy institute concept goes back several years, to 1968-69, when the National Academy of Sciences' Environmental Study Group of the Environmental Studies Board undertook a study which culminated in the January 1970 report, "Institutions for Effective Management of the Environment." The report identified inadequacies in the existing institutional structure, and several institutional responses were recommended by the NAS, including the Institute for Environmental Studies. This was termed "perhaps most important" among the institutional needs.

The recommended institute closely resembled the concept which was later embodied in the Dingell proposal. It was strongly urged in the report that the Institute be organized as a non-profit corporation independent of direct Government control, funded largely from the private sector, with grants or contracts from the Government. Long-range planning, early warning on potential environmental threats, and other studies were among the functions of the proposed institute, with strong emphasis on the interdisciplinary nature of the work that was needed. Independence from Government was deemed to be important in order to assure wide latitude to the Institute in determining for itself which problems it would address.

Meanwhile, in early 1970 the Council on Environmental Quality (CEQ) was established, and, soon afterward, the Environmental Protection Agency (EPA) was established by Presidential reorganization plan. Gordon MacDonald, who had been chairman of the NAS Environmental Studies Board, went to the CEQ as one of the three Council members. He favored the

idea of an institute and established some interest in it at CEQ. Around this time, McGeorge Bundy of the Ford Foundation began talking to the CEQ Chairman Russell Train about the possibility of the Ford Foundation funding a private-sector institute geared to the concept of the Environmental Studies Institute. Bundy was seeking assurance of Government support and patronage of such an institute. CEQ Chairman Train favored the idea, and the White House staff initially was favorably inclined toward establishment of the Institute by administrative action.

In his February 8, 1971, Environmental Message, President Nixon stated support for such an institute and indicated definite Administration backing for the concept. Under Point V, "Further Institutional Improvement", he stated in that Message:

The solution to environmental and ecological problems are often complex and costly. If we are to develop sound policies and programs in the future and receive early warnings on problems, we need to refine our analytical techniques and use the best intellectual talent that is available.

After thorough discussions with a number of private foundations, the Federal Government, through the National Science Foundation and the Council on Environmental Quality, will support the establishment of an Environmental Institute. I hope that this non-profit Institute will be supported not only by the Federal Government but also by private foundations. The Institute would conduct policy studies and analyses drawing upon the capabilities of our universities and experts in other sectors. It would provide new and alternative strategies for dealing with the whole spectrum of environmental problems.*/

Therefore, it appeared at that time, that the Institute would come into being through administrative action. However, a stumbling block emerged in the discussion of selection of a director for the Institute.

*/ Nixon, Richard M. "The President's 1971 Environmental Program." Weekly Compilation of Presidential Documents, Volume 7, no. 7, Feb. 15, 1971. Office of the Federal Register, National Archives and Records Service, General Services Administration, Washington, D.C. pp. 202-203.

The choice that emerged in talks among Bundy, Train and others was Allen Enthoven, a Democrat and former Assistant Secretary of Defense in the Kennedy and Johnson Administrations. Objections from the White House to Enthoven cooled the enthusiasm of the Ford Foundation and other foundations for the concept, and the possibility of bringing the Institute into being without legislation faded.

In March, 1971, Senator Jackson introduced S. 1216, which was designed to establish the Environmental Institute. No action was taken on this measure in the 92nd Congress, however. An attempt to revive the concept through the Administration was considered briefly in 1972 and a re-assessment of it was done for the Ford Foundation in summer 1973. However, Guy Stever, Director of the National Science Foundation (NSF), was opposed -- Stever argued the NFS's program for Research Applied to National Needs (RANN) could do the same thing. During the upset over Watergate, the attempt to resurrect the concept administratively died definitively.

In the 93rd Congress, Mr. Dingell introduced the measure, and held hearings on it in 1974.*/ No further action was taken in that Congress, and the measure was re-introduced in the 94th Congress as H.R. 75.

Rationale for The Institute

Arguments favoring the Institute concept particularly stressed the need for comprehensive long-range planning focused on environmental problems. The complex and interrelated nature of most environmental problem areas make long-range, far-sighted planning a necessity if environmental

*/ U.S. Congress. House of Representatives. Committee on Merchant Marine and Fisheries, Subcommittee on Fisheries and Wildlife Conservation and the Environment. "Growth and Its Implications for the Future." Part 4. Hearings, June 11, 12, 13, July 15, 16; November 25, 1974. Govt. Print. Off. Washington, D.C.

crises are to be avoided, according to those forwarding arguments in favor of the Institute.

The NAS study on managing the environment emphasized the critical need for long-range planning in an institute which would have a principal focus on development of strategies to achieve future situations in which the environment would be less disrupted than would be anticipated if present trends were to continue. The report stressed the interdisciplinary nature of such planning, and argued that the basis for devising the necessary strategies must be identification of decision-points in advance -- the "times and places at which decisions made will profoundly affect the future," and determination of the key levers, "the instruments by which decision-makers can bring about significant changes."*/ Analysis and recommendations for changes in existing institutional structures was seen as an important part of this process.

Part of this long-range planning process would be the provision of "early warnings" of potential environmental threats.

In its rationale for a non-governmental Environmental Studies Institute, the NAS report said:

We conclude that the multi-disciplinary talent that must be brought to bear on environmental problems, the freedom from the pressure of day-to-day operations required for long-range planning, the involvement of the various government agencies, and the different levels of government as well as the Congress and the public, all argue convincingly for the establishment of an analytical institute outside the structure of government. **/

*/ NAS Study, op. cit. p. 18

**/ Ibid., p. 22.

The Ecological Society of America, in its report, "National Institute of Ecology: An Inquiry," proposed a similar scientifically and professionally staffed Institute. In reaching conclusions about the need for such an institute, the researchers interviewed some 326 potential users, including existing research organizations, and potential sources of support. Many of these interviewees made the point that no organization then existed in the U.S. with the needed capability to carry out long-range, multidisciplinary analyses of environmental trends and of developing alternate strategies.

The need for long-range planning and the inadequacy of existing institutions to do it also came up frequently in the 1974 hearings on the Institute legislation.

Representative John Dingell, Chairman of the Subcommittee on Fisheries and Wildlife Conservation and the Environment of the House Committee on Merchant Marine and Fisheries, made a point of this in opening the hearings

It seems quite clear that our ability to do long-range planning in this country is severely limited. Historically, we appear to have deep suspicions about planners in general, and while this may be understandable, it does create problems as the nature of the long-range predicament becomes increasingly clear....

One method of dealing with this issue might be to create a special type of institution for the purpose, and one such proposal has been made in legislation introduced by the present occupant of the Chair.* /

Gordon MacDonald, one of the original three Council on Environmental Quality members, and director of Environmental Study Group which prepared the NAS report, backed the Institute legislation in these words in the 1974 hearings:

This legislation embodies a proposal made by the Administration in its second message on the environment in 1971; that is, the creation of a body that would have continuing responsibility to look at, examine and recommend policies with respect to the environment.

* / Hearings, op. cit., p. 1.

Such an institution was needed at that time. It is needed even more today.

... I strongly support the intent which is to provide Congress with longer term policy analyses that will help frame legislation and help to develop in such a way that we are not only looking at the immediate problems but also those longer term questions that are bound to come out.

... This bill would provide another institutional mechanism, a much needed institutional mechanism to both the Congress and the executive in examining some of these longer term questions that I am afraid often are neglected in the face of the immediate needs of today. */

In addition to the need for long-range planning capability in environmental concerns, these reports and the hearings testimony indicated near unanimity on the inadequacy of present institutions to fulfill the need. Some Administration testimony in the 1974 hearings favored the establishment of this capability in existing structures, rather than in the proposed Institute, but did not dispute the fact that present capability was clearly inadequate.

The inability of existing structures to respond to environmental research and planning needs was a theme in the reports of the NAS and Ecological Institute, and was repeated four years later in the hearings, despite the creation of several environmental organizations in the Government in the interim.

In 1970, the NAS study reached this conclusion:

Of the three functions defined in the previous section -- the development of long-range strategies, the early warning, the quick reaction analytical functions -- it is unlikely that the first two will receive within the existing governmental structure the kind of continuing attention that is necessary. These requirements will best be met if study and evaluation are carried out by an independent group with no commitment to the operating policies of a particular government agency, and whose findings should also be available to the Congress and the public. **/

*/ Hearings, Ibid., p. 53.

**/ NAS Report, op. cit., p. 22.

The report argued that effective comprehensive treatment of environmental questions could not be carried out in the existing structure;

For effective management of the environment, decision-makers in government agencies require the very best in analysis, so that likely environmental consequences of various options are clearly indicated. At present this analytical function is usually carried out within a government agency by busy officials with many other duties and responsibilities. Faced with the myriad day-to-day pressures of government, analysts often are unable to provide fresh points of view or provide the independent analysis essential to really effective management. Further, the various professional talents needed for balanced decisions -- medical, physical, economic, etc. -- may simply not be available within any single government agency. Use of consultants is frequently of limited value and inconvenient, and too often leads to delay. Similar problems face members of Congress concerned with legislation affecting the environment. */

In 1974, Charles A. Zraket, Senior Vice President of Mitre Corporation, which does non-profit contract research work for Government agencies, made this statement with respect to the need for the Institute:

Based on our work over the past five years for EPA, CEQ, Department of Interior, Department of Transportation, NSF, and other Government agencies, it is clear that such an Institute can play a unique, key, and necessary role in helping to shape rational and cost-effective environmental policies for the Nation.

I do not see the Institute replacing any activity now going on, but something which is needed in addition to present activities to provide a substantive, integrating, intellectual, across-the-board policy study activity.

As you know, current U.S. governmental and industry objectives and programs in environmental research and control are many, costly and fragmented. **/

Mr. Zraket said about the Institute proposed in the legislation being considered: "Its unique position and orientation would allow it to work cooperatively with and obtain information from a wide spectrum of sources -- industry, government, universities, foundations, private and public interest groups."

*/ Hearings, op. cit., p. 644.

**/ Ibid., p. 644.

Another important aspect of the Institute concept which was stressed in the reports and hearings testimony was the need for independence from direct government control. As the NAS stated in its report, "Without [this] the institution would not be able to attract and retain the professional talent that is required to deal with difficult environmental issues . . . To be independent the institution must have wide latitude in selecting the problems on which it is to work." */

Commenting on the strategy for assuring impact for such an institute, Mr. Zraket of Mitre Corporation indicated his feeling that independence would be a critical factor:

"There are tens of thousands of people doing research in this area. It is a very valid question to ask what are 200 or 300 more going to add to this. I feel that unless such an institute is independent, and can serve as an integrating force for all the work going on with these thousands of people who are doing it, . . . then it would be a waste of time to have such an institute. That is why I put such a great emphasis on the fact that this kind of Institute has to have the kind of independent charter and role that would allow it to get all of the information that these hundreds of organizations around the country are now generating in a very fragmented way, and help pull it together into an integrated policy framework. **/

The independence of the Institute as a critical element in permitting free choice of the subject matter to be studied was viewed by most commentators as a crucial ingredient in effective long-range planning. The long-range planning to identify environmental problems and their potential solutions, which was viewed as the most important function of the proposed institute, could be carried out only by an independent entity, it was argued. This was because the missions of most on-going organizations in the Government would prevent truly objective assessment of potential environmental problem areas.

*/ NAS report, op. cit. p. 23.

**/ Hearings, 1974, op. cit., p. 655.

At the same time, the necessity for effective access to Government decision-making processes was also viewed as integral to the success of its purpose. Thus the involvement of Federal officials on the Institute Board, and as its incorporators, was intended to assure a vital link to the Federal structure, but not a dominant influence. The over-all necessity for the Institute's independence was viewed by most commentators as a primary objective to be internalized by the legislation establishing it, and by all the persons involved in the Institute's functions.

An exception to this point of view was expressed by Administration officials, who voiced a preference in the 1974 hearings for the development of capability to do long-range planning in the existing Federal organization, in the CEQ and/or EPA. However, their arguments did not include assertions that such a capability currently existed, and all agreed that it was important to effective management of environmental problems.

Summary: The Institute Concept

Early in the 1970's the need for an independent environmental viewpoint which would benefit Government decision-making but not be dominated by it was expressed in reports on environmental management. The need was for the formulation of research and planning projects which could identify environmental problem areas, carry out or contract for the necessary research or data collection, and then go on to provide an effective degree of policy analysis, including identification of various options for dealing with the problems which were identified. An independent Institute of Environmental Studies was proposed, linked to the Federal Government through involvement of key department or agency persons, and with partial Federal funding, but free from direct Government control.

This concept received favorable attention in the early 1970's as a possible creation of the executive branch. When this failed to materialize, the concept was embodied in legislation which has been introduced in the past three Congresses.

The inadequacies in environmental planning and research which the Institute was designed to remedy were seen to include the lack of adequately coordinated research and the monitoring priorities with consequent voids of knowledge in some areas, especially the interdisciplinary areas; the very little direct connection between the research and planning and the policy and decision-making processes; the few alternative options being presented other than the course of action being proposed; the difficulties in involving laboratory scientists in existing mechanisms for policy, and a related lack of information transfer to decision makers. Not only the collection of information and performance of research, but also the analysis of implications of the research and generation of valid options which make meaningful choices available to decision-makers would be the purpose of such an institute.

The need for such an entity was described before 1970, and was reiterated in 1974 during hearings on the legislative proposal. Since it would appear that conditions have not changed appreciably today in the areas of concern under discussion in these hearings, it is quite likely that many of these same arguments would be made today.

NATIONAL ENVIRONMENTAL LABORATORIES

The Concept

Early in 1970 several reports were issued which backed the concept of a national laboratory structure -- either a single large laboratory or a collection of four or more laboratories -- with a comprehensive environmental focus. The work of scientists in several fields of physical and natural science would be applied to the comprehensive environmental problems. The inclusion of social scientists was also proposed in some of these reports.

Although the National Academy of Sciences' report on "Institutions for Effective Management of the Environment" and the report of the Ecological Society of America both favored this concept and urged establishment of such an entity, the real impetus for the concept came from the existing national laboratories, affiliated with the Atomic Energy Commission, where there was an interest in doing comprehensive environmental work. A task force on the national laboratory concept at Oak Ridge National Laboratory made a report in January, 1970, urging establishment of a national environmental laboratory. This was soon followed by introduction of legislation to create such an institution.

As proposed in this legislation, the laboratory would get its mandate from the finding in S. 3410 of the 91st Congress "that to assist in the effort to restore and enhance the environment and to minimize future damage to the environment, it is necessary to establish a new organization with sufficient professional breadth and scope to provide a unified and systematic approach to the problems of technology assessment and environmental quality;

that such an organization will complement those public and private agencies presently dealing with various aspects of the environment."

The functions of this organization were to include basic research, analyses of human and natural activities affecting the environment, and other necessary work. It would have included, but not been limited to data collection, storage, and dissemination; data analysis and synthesis; development of methods and devices and analysis of various environmental policy alternatives; the formulation of alternative solutions to existing and probable environmental problems; and the performance of other functions to assist public and private agencies in restoration, enhancement, and protection of the environment.

Its policy role was to be limited to presentation of options to policy makers: "It shall not be an appropriate function for the organization or for any of its constituent parts.... to make specific recommendations as to policy or choices between alternative courses of action ... but ... the organization may present to policy makers various alternative courses of action and describe the probable results of each such course of actions," according to S. 3410.

To carry out these purposes, S. 3410 would have established a National Environmental Laboratory, together with a Board of Trustees to administer it. The Laboratory was to consist of from one to four regional national laboratories, with geographical distribution determined by environmental criteria. The proposed bill did not specify any proposed sites for the laboratories, but the backers of the bill generally anticipated that Oak Ridge National Laboratory would be the location of the first laboratory, on the basis of expressed interest and on-going environmental work at Oak Ridge.

The Board administering the Laboratory was to consist of the Administrator of the Environmental Protection Agency, the Chairman of the Council on Environmental Quality, the Directors of the National Science Foundation and the Office of Science and Technology, and five members appointed by the President from the public, with Senate confirmation.

The Board would be responsible for selecting the sites of national laboratories and for determining how many, up to a maximum of four, would be established. The Board would also establish broad policy directions for the Laboratory, "as determined from an analysis of the social and environmental priorities established by the Congress, the executive branch, and the private sector." The Board for the laboratories was to seek grants from private sources as well as Government funding. The Board was to seek grants from and make contracts with State, local and private organizations and agencies. The Laboratories were also to operate under grants and contracts from Federal agencies for work relevant to agency environmental problems or programs.

Thus, although federally funded, the Laboratory would have been independent of the mission-oriented agencies, and its independence was intended to facilitate the capability of the Laboratory to formulate research plans in areas of its own choosing, where the comprehensive perspective of its staff revealed problems needing investigation.

The exclusion of an explicit policy analysis function for the Laboratory rendered it compatible with the purposes of the Environmental Institute described in the first section of this report, according to the proponents of both proposals.

Funding for the Laboratory was to come from three sources: a trust fund of \$250 million which would be established over five years, invested in interest-bearing obligations of the United States; annual appropriations of up to \$200,000,000 for each laboratory established under the Act; and the grants and contract funds obtained from other Federal and lower governmental units or private organizations.

History and Progress of the Laboratory Concept

In the period 1968-1969, the idea of a National Environmental Laboratory took shape, arising largely from interest in the national laboratories affiliated with the Atomic Energy Commission (AEC) in expanding their mission. In particular, the top-level staff at Oak Ridge National Laboratory (ORNL) were interested, having begun environmental work in connection with their AEC mission, and having some need of a renewed mission in view of the passing of the heyday of atomic energy experimentation.

Talks with Senator Howard Baker of Tennessee created the necessary interest on Capitol Hill, and an ad hoc NEL Concept Committee was formed at Oak Ridge. This Committee made its report, entitled "The Case for National Environmental Laboratories," */ in January of 1970. This report argued that such a laboratory was needed, and outlined the proposed functions of the organization. This closely approximated the proposal in S. 3410, introduced by Senator Baker, on February 6, 1970, "The National Environmental Laboratory Act of 1970."

*/ U.S. Congress. Senate. Committee on Public Works. "The Case for National Environmental Laboratories." A Report prepared by the Ad Hoc NEL Concept Committee, Oak Ridge National Laboratory, at the request of the Honorable Howard H. Baker. Committee Print. 91st Congress, 2nd Session. U.S. Gov. Print. Off. Washington, D.C. January, 1970.

At the end of the 91st Congress no action had been taken on the measure, and it was reintroduced in the 92nd Congress by Senators Baker and Muskie on March 4, 1971 as S. 1113. The Committee on Public Works had issued a committee print on the National Environmental Laboratories in January 1971, containing various reports and comments by agencies and organizations on the need for such an organization. */

In April and May, 1971, hearings were held on the proposal **/ and in December of that year the bill passed the Senate. No action was taken in the House after its referral to the Science and Astronautics Committee. After the 92nd Congress, no further action was taken to achieve enactment of the NEL proposal. The energy crisis of 1973 stimulated an enlarged area of concern for the national laboratories, and the internal interest in the NEL proposal lessened.

Rationale for the Laboratory Concept

The arguments favoring establishment of a national environmental laboratory were similar to those advanced in favor to the environmental institute; the major difference in discussions on the NEL was a greater emphasis on the need for research and less on the policy needs. In the case of both the NAS report and that of the Institute of Ecology, the Laboratory and the Institute were both part of a multi-faceted organizational scheme proposed to work in concert toward effective environmental policies and planning.

*/ U.S. Congress. Senate. Committee on Public Works. "National Environmental Laboratories," A Compilation of Comments and Materials Related to a Proposed Environmental Laboratory. Committee Print. 92nd Congress, 1st Session. U.S. Govt. Print. Off., Washington, D.C. January, 1971.

**/U.S. Congress. Committee on Public Works, Subcommittee on Air and Water Pollution. "National Environmental Laboratories." Hearings on S. 1113. 92nd Congress, 1st Session. U.S. Govt. Print. Off., Washington, D.C., April 28 and 29, May 3, 4, 5, and 6, 1971.

The NAS report on institutions needed for managing the environment had this to say:

There is no laboratory within the Federal Government structure, and probably none outside, that carries out research on the environment as a whole.

...In our judgment, all environmental research efforts now going on at the Federal level are inadequate from an ecological point of view ... As a result, the viewpoint of the ecologist, dealing with and viewing the environment as a system, has not had sufficient influence on Federal research programs.

A National laboratory is one of the major components we believe necessary to meet the nation's needs for environmental research. An institution of the kind we envision, outside the government, has advantages of flexibility and minimum bureaucratic constraints, and thus we could have relatively free interchange of research staff and information between universities, the National Laboratory, and Federal laboratories. */

The NAS report specifically cited the success of the national laboratories at Brookhaven, Oak Ridge, Los Alamos, and Livermore, and indicated that emulation of these models was suggested in their proposal for an environmental laboratory.

The fragmentation of existing organization for environmental work and its consequent adverse effects, was noted in a report from the Argonne Universities Association Conference, titled "Universities, National Laboratories and Man's Environment." Discussing the need for a comprehensive environmental policy, the report deplored the exclusion of a wider perspective which had resulted from the specialization in the study of subjects involving the environment. This report stated:

*/ NAS report, op. cit., pp. 43-44.

A grand strategy for taking the offensive is urgently needed. Fighting 'brush fires' is not enough, especially when only some are fought successfully and even those victories are too often temporary. A sound and farseeing environmental policy based on deliberate value choices and backed by sound scientific research and strong political and economic decisions is the best and probably the last hope for man to have a decent world to live in.

Unfortunately, there are at least three serious handicaps to the mounting of the kind of offensive that is now essential. One is the fragmented approach of our educational system; the second is the fragmented approach of our governmental structure; and the third is the fragmented approach of the conservation movement itself. */

Turning to the government, again, we find far too much fragmentation, specialization, and lack of coordination. The need for cohesion and vision in environmental policies is glaringly acute in the Federal bureaucracy, where almost unbelievable numbers of Government agencies are making important environmental decisions with little administrative machinery for full exchange of information, let alone for thorough coordination of policy. But it does not stop there. Decisions are made and actions of immense collective impact on the environment are taken almost daily, mostly without serious efforts at planning, by a staggering conglomeration of State agencies and by countless local authorities who have little understanding of ecology and often do not try to get complete information. **/

Discussing the shortcomings of the system with respect to long-range planning, this report went on to say:

The overall impression made by such government programs as HEW's [work on environmental problems] is one of sound and useful work, but with a tendency to focus on current problems and immediate solutions. What seems to be lacking is a longer range approach that coordinates and integrates the separately funded bits and pieces of research. ... In the larger question of environmental quality, the tendency of problems to be segregated into what Owen Barfield has termed 'watertight compartments' is even more pronounced. Because of the resulting dispersion of effort, more fundamental questions of policy and implementation tend to become submerged by the pressing need for immediate results. ***/

*/ U.S. Atomic Energy Commission. "Universities, National Laboratories, and Man's Environment." Argonne Universities Association Conference held July 27-29, 1969, Chicago, Illinois. USAEC Division of Technical Information Extension, Oak Ridge, Tennessee. November, 1969. p. 25.

**/ Ibid., p. 26

***/ Ibid., p. 91.

Commenting on the favorable aspects of carrying out environmental research through the national laboratories, Henry S. Rowen, President of the Rand Corporation, cited in the report a major drawback in using them in their existing form without constituting an environmental structure:

My principal concern with the potential contribution of these laboratories is that they do not have a history of multi-disciplinary research that included both the technical and the social sciences. With regard to the kinds of problems we are concerned about, this can be a serious deficiency. */

Mr. Rowen ended by suggesting joint research programs involving universities, national laboratories and non-profit research institutes, which could be informal or formal.

The Ad Hoc NEL Concept Committee advocated strongly the need for working-level synthesis of the many disciplines involved in environmental problems:

What is missing and necessary is a means for reintegrating these fragmented efforts at the working level, plus a focus of advisory functions at many levels, all of which will match the scope of the work to the true extent of what needs to be dealt with. **/

Senator Edward Gurney of Florida testified at the 1971 hearings on the laboratories proposal on the need for an integrative organization like the NEL:

We have made a strong beginning then, in both our State and National regulations for environmental protection. Passing legislation to control pollution, however, is not enough. What is needed, as a supplement to legislation, is a means for all of us to analyze and evaluate our programs -- a structure through which the information which we acquire in implementing our legislation can be reviewed and examined. The National Environmental Laboratory proposed by this bill would accomplish that end. ***/

*/ Ibid., p. 91.

**/ Ad Hoc NEL Concept report, op. cit., p. 5.

***/ Hearings, op. cit., p. 6.

There is no laboratory in the Federal Government that now carries out such systematic research on the environment as a whole. If we are to successfully develop knowledge and techniques that will lead to effective management of the environment, then we must provide the tools through which diverse and specialized viewpoints can be adapted to an interdisciplinary approach. */

Dr. Alvin Weinberg, Director of Oak Ridge Laboratory, stressed the greater capability for long-range perspective which would exist in a national environmental laboratory, a perspective which he believed Oak Ridge's makeup had permitted in the work done there:

...if entities such as NELs were established. They would interact strongly with the existing agency that has prime responsibility for the environment. But the NELs would interact not only with the agency that had prime responsibility for the environment; they would interact with all of the agencies that have any responsibilities for the environment. They would pu the pieces of the puzzle together at the working level. This I believe is the only level at which the pieces can be reintegrated, and where one can come up with viewpoints that are characterized not only by their coherence but also by their long-range character. **/

The perspective of Dr. F. Herbert Bormann, School of Forestry at Yale University and President of the Ecological Society of America, indicated the central necessity he felt the NELs to be:

... I think that there is an increasing need to understand the complex ecological and social interactions generated by the operation and continued growth of modern technological society.

I think that the kind of understanding that the operation of these national laboratories will generate is really basic to good government. I do not think it is an option. I think it is an absolute necessity for the development of policy that will lead to a healthy future for our country. ***/

*/ Ibid., p. 7.

**/ Hearings, Ibid., p. 18.

***/ Ibid., p. 309.

However, during these hearings on the Laboratory legislation, Nixon Administration witnesses generally expressed opposition to setting up the National Environmental Laboratories (NELs) on the grounds that a number of other new environmental organizations had been recently established, and it would be preferable to give them an opportunity to function in the necessary areas before creating still another type of entity.

Gordon MacDonald, member of the Council on Environmental Quality, who had headed the NAS report which recommended such a laboratory, indicated some reservations at the time of the hearings about the laboratory concept, although he was still voicing strong support for the National Environmental Institute concept.

As indicated earlier, we do indeed agree that there are unmet needs for: Basic environmental research aimed at understanding of ecosystems; More applied research directed toward environmental insults ... Formulation and testing of alternative solutions to existing and probable environmental insults.

But we believe that a new independent structure of national environmental laboratories is not the answer. Back in 1969, when the idea of a National Environmental Laboratory was first proposed and I was working on the NAS/NAE report on institutions for effective management of the environment, there appeared to be a case for such an institution.

It was my judgment then, and still is, that the environmental research efforts going on at the Federal level is inadequate from an ecological point of view. Now, however, there are structures to fill this need.

In short, we already have the authority we need to develop and coordinate activities in many of the proposed areas of activity of the National Environmental Laboratory. */

However, this statement was based partly on Dr. MacDonald's expectation that the Institute would be established by Administration action and was in fact on the verge of being created.

*/ Ibid., pp. 469-470.

Summary: The Laboratory Concept

Largely through the interest of the national laboratories in expanding their scope of operations, and supported by studies of environmental institutions which indicated the need for a national environmental research program through laboratories established for that purpose, there came into being in early 1970 legislative proposals for a National Environmental Laboratory. It would have consisted of one or more central, comprehensive laboratories equipped with scientific expertise from both physical and social sciences. It would have been designed to provide integrated analysis of environmental problems with options to be developed for the use of policy and decision-makers.

The proposal was the subject of specific reports on it from an Ad Hoc NEL Concept Committee from the staff of Oak Ridge National Laboratory, and from the Senate Public Works Committee. Hearings were held on it in 1971, and the measure passed the Senate in that year.

However, no further action was taken, and after the 92nd Congress, the proposal was not reintroduced. This may be in part due to the uniform opposition of the Nixon Administration to the concept, and partly due to the emergence of the energy crisis, which engaged the national laboratories in an expanded energy research role.

REGIONAL OR STATE ENVIRONMENTAL CENTERS

The Concept

The concept of promoting environmental research through organizing State or regional research centers was also embodied in legislation introduced in the early 1970's.

The need for better environmental research, using multidisciplinary approaches, was an oft-repeated theme of the reports on environmental organization which have been discussed above, emerging in the late 1960's, many of them published in 1970. The need for better educational programs embodying the comprehensive framework required by environmental problems was also a theme. These two needs were addressed by the proponents of the environmental centers.

After enactment of the National Environmental Policy Act of 1969 (NEPA) on January 1, 1970, the requirement for an environmental impact statement on those major Federal actions significantly affecting the environment, revealed that there was a lack of data which often made fulfilling this requirement difficult.

In addition, broad pollution control legislation had been enacted or was under consideration which gave States greatly increased pollution control responsibilities. Generally, decision-making at all levels of government often required more environmental knowledge than was available. These factors contributed to the introduction in 1971 of the State Environmental Centers Act which has been under active consideration since then.

The proposed legislation would provide for establishment of a federally supported environmental research center in each State that so desired

it, or a regional center for two or more states who wished to operate a center cooperatively. The environmental center would be located at an educational institution, or in a private or public foundation designated by the Governor of the State, subject to approval of the Administrator of the Environmental Protection Agency, who would be in charge of the assistance program. The designated institution was required to have the greatest demonstrated ability in the State to carry out the needed research, investigations, experiments, technology applications, training of professionals, education extensions, and other purposes outlined in the Act.

The administration of the center would be the responsibility of the designated university or foundation, with a chief administrative officer who was an official of that institution. It was intended that each center should have a nucleus of professional, scientific, technical and other personnel in a broad range of fields related to environmental improvement, including land, water, and air resources.

The bill specified the duties of each environmental center: "to plan and conduct and/or arrange for a component or components of the universities, colleges, or foundations with which it is or may become associated, to conduct competent research, investigations, and experiments of either a basic or practical nature ... in relation to environmental pollution and other environmental problems, and opportunities to provide for the training of environmental professionals through such research, investigations, and experiments, which training may include but shall not be limited to biological, ecological, geographic, geological, engineering, economic, legal, energy information and data, and other aspects of environmental problems."

An Environmental Center Research Coordination Board was to be established, chaired by the EPA Administrator, and including representatives from several Federal departments and agencies dealing with environmental issues, plus members from university associations, private business firms, non-profit environmental organizations, the scientific community, and the general public. The purposes of the Board would be to assist the Administrator with program development and operation, and to keep their agencies and organizations informed of the activities of the environmental centers.

Each individual center was also directed by the proposed bill to establish an advisory board appointed by the chief administrative officer.

In addition to the environmental research and investigations directed by the Act, each center was to include an extension education program directed to the public, units of government, business, industry, and public interest groups; it was to provide workshops, seminars, clinics, courses, field trips, demonstrations, published materials, and a reference service to facilitate rapid dissemination and use of environmental information.

Funding was set at \$7 million for the first year, \$8.9 million the second year, and \$14 million each succeeding year, to be disbursed in equal shares to each center; in addition, \$10 million the first year and \$20 million in each succeeding year, would have been allocated on the basis of population, land area, and growth rate of the States or regions in which the centers were located.

History and Progress of the Centers Concept

After its introduction in the 92nd Congress, on February 9, 1971, as S. 681, the Centers bill was the subject of hearings by the Senate Committee on Interior and Insular Affairs in November, 1971. */ Meanwhile, H.R. 56, the National Environmental Data System Act (discussed below), had passed the House and was referred to this Committee in the Senate. The Committee added S. 681 to H.R. 56, titled the combined bills "The National Environmental Data System and State Environmental Centers Act of 1972" and passed them. Hearings were held in the House in July 1972 on the combined bills. The conference committee retained the addition, and the Centers bill passed Congress as Title II of the measure. However, on October 21, 1972, President Nixon vetoed the measure, citing costs and possible duplication of existing Federal environmental efforts in EPA and CEQ.

In the 93rd Congress, the Senate passed S. 1865, the Environmental Centers Act of 1974, on June 12, 1974. No action was taken in the House on this measure. However, the House version of the proposal, H.R. 35, was the subject of hearings by the House Merchant Marine and Fisheries Committee. **/ This committee is the originating committee for the National Environmental Policy Act in the House, and considered H.R. 35 because it was introduced as an amendment to NEPA.

*/ U.S. Congress. Senate. Committee on Interior and Insular Affairs. "Bills Amending or Related to the National Environmental Policy Act." Hearings, 92nd Congress, 1st Session, on H.R. 56, S. 1216 and S. 681. U.S. Govt. Print. Off., Washington, D.C. November 19, 1971

**/ U.S. Congress. House of Representatives. Committee on Merchant Marine and Fisheries, Subcommittee on Fisheries and Wildlife Conservation and the Environment. "Growth and Its Implications for the Future". Part 4. Hearings on Environmental Research Centers, H.R. 35. U.S. Govt. Print. Off. Washington, D.C. June 11, 12, 13; November 25; July 15, 16, 1974.

The measure did not pass during the 93rd Congress, however, and it was introduced again in the 94th Congress as S. 761 and H.R. 35. The latter has been the subject of hearings in this Congress by the Subcommittee on Environment and Atmosphere of the House Science and Technology Committee.

Rationale for the Centers Concept

The basic rationale behind the concept of State and/or regional environmental centers was that there already existed in the universities, foundations, and other research-oriented institutions a considerable body of environmental expertise. However, in many cases, these human resources were not put to optimal use, and were instead scattered and uncoordinated. Not being focused on the environmental problems of their areas, these experts worked on small fragments of the total problems, and usually did not interact with those working on related matters. In this process, the more comprehensive problems were overlooked.

Rather than relocate these individuals in a Federal agency, or to try and duplicate their expertise in a Federal entity, it was argued that they should be incorporated through the environmental centers into localized research centers that could both study the comprehensive environmental problems of their areas -- where the problems actually occurred -- and also could plug into a national network of such centers which could afford integration of the knowledge produced.

It was agreed by all commentators in the period when the centers concept originated that there was a pressing need for greater information and more data on ecology and the environment. It was argued by proponents

of the Centers that the best way to achieve it would be through a decentralized system which would provide for the needed research and would facilitate the possibility of the necessary coordination among these centers. They would provide indentifiable central research and information services for the various States and regions of the United States.

Senator Henry Bellmon made this statement in the 1972 hearings on the Centers:

The Nation is in desperate need of a foundation of information on the current and continuing status of the environment, on changes and trends in its condition, and on what those changes mean to man.

Without such information, we can only react to environmental problems after they become serious. The Nation needs a system to systematically and continuously accumulate the knowledge needed to develop long-term programs for environmental enhancement.

Passage of this bill will enable Government at all levels to know when and where action is needed. Essential to development of this kind of information is a comprehensive program of nationwide environmental monitoring, collection, analysis, and effective use of the information.*/

In the same hearings, Dr. George R. Waller, President of Mid-continent Environmental Center Association, Inc., of Tulsa, Oklahoma, endorsed both the data bank and environmental centers concept, and said about the centers:

The State Environmental Centers act provides a way to develop a broadside attack at minimal cost to the Nation.

A unique feature of the State environmental center would be its ability to draw upon the best brainpower within a State, and to have a very large pool of brain power solving environmental problems peculiar to that State or region." **/

*/ U.S. Congress. House of Representatives. Committee on Merchant Marine and Fisheries. Subcommittee on Fisheries and Wildlife Conservation. "Fish and Wildlife Miscellaneous." Hearings on Environmental Data System - H.R. 56, July 28, 1972. U.S. Govt. Print. Off., Washington, D.C. p. 107.

**/ Ibid., p. 117.

It was assumed by proponents of the Centers legislation that an important purpose of the act would be to strengthen the capacity of the designated institution to educate future environmentalists in the broadest possible context. Thus the legislation also addressed the recommendations of reports on environmental education, which included strengthening the comprehensive focus and capabilities of educational programs on the environment. This concern was addressed by a September, 1969, report of the Office of Science and Technology:

The colleges and universities of the nation constitute a powerful institutional resource for education, research, and open discussion of our problems and opportunities. At present, except for the prophets of environmental disaster, little of this open discussion of our future environmental alternatives seems to take place at the colleges and universities. There is a national shortage of broadly trained professionals to deal with environmental problems. */

The NAS report on institutions for effective management of the environment also cited the importance of university programs problem-oriented to attack environmental problems, and it was also quoted by proponents of the Centers legislation because it had advocated greatly strengthening environmental research and development in the national laboratory setting; work which, said advocates of the Centers, could also be productively accomplished through the university or foundation-based environmental research centers.

The NAS report said:

Most universities are organized along departmental lines, and interdisciplinary or multidisciplinary approaches, such as would be required

*/ Steinhart, John S. and Cherniack, Stacie. "The Universities and Environmental Quality -- Commitment to Problem Focused Education." A Report to the President's Environmental Quality Council. Office of Science and Technology, Executive Office of the President. Washington, D.C. September, 1969, p. 1.

for dealing with environmental matters, tend to be concentrated in institutes, which generally stand apart from the main focus of the parent institution. This is in part a consequence of history, but partly results from a kind of distaste for problem-oriented activities among more tradition-oriented scholars. The universities, however, must provide the needed manpower to cope with the environmental problems of our society, and this can be done only by providing relevant education at both the undergraduate and graduate levels. */

However, despite favorable arguments put forward by Members of Congress and the representatives of possible State or regional organizations which could be designated as environmental centers, the Federal Administration comments on the proposal were uniformly negative. They argued that the environmental research underway in Federal agencies such as the Environmental Protection Agency, and sponsored by the Council on Environmental Quality and the National Science Foundation, should be the focus of funding for this purpose. The Centers were described by these spokesmen as duplicative and a possible misuse of environmental funding which could be better used in the existing organizations.

Summary: The Environmental Centers Concept.

The universally perceived need for more extensive and more comprehensive environmental research which was expressed in the late 1960's and early 1970's, coupled with the increased interest in strengthening the environmental education capacities of universities and other research centers, led in 1971 to introduction of legislation to establish Federal funding for environmental research centers which could be established in each of the States who wished to designate an appropriate institution, or in an institution for more than one state, to serve that region.

*/ NAS report, op. cit., p. 32.

The centers concept gained favor from representatives of possible organizations that might serve as centers, and from representatives of such areas in the Congress. Federal Administration spokesmen did not favor the idea, indicating that it would be duplicative and unnecessarily expensive. They argued that the result would be to funnel funds into the Centers that were urgently needed in the central Federal effort, already underway in the Environmental Protection Agency, the Council on Environmental Quality and other Federal agencies.

The legislation passed in the 92nd Congress but was vetoed by President Nixon. It passed the Senate again in the 93rd Congress, but not the House. In the 94th Congress, legislative proposals for the Regional or State Environmental Centers have again been introduced.

NATIONAL ENVIRONMENTAL DATA SYSTEMThe Concept

Early in 1970, the concept of a national data bank or system which would serve as the central repository for all relevant environmental data and information emerged. This was seen as complementary to the other institutional responses already forthcoming in the Council on Environmental Quality and the Environmental Protection Agency, as well as to the other proposed institutions described in this report.

The data bank concept was put forward in legislation proposed by Congressman John Dingell early in 1970; the concept evolved slightly and was re-introduced in the following year. The basic form did not change significantly, however.

The legislation proposed establishment of a National Environmental Data Bank, functioning under the Council on Environmental Quality, which would "serve as the central national coordinating facility for the selection, storage, analysis, retrieval, and dissemination of information, knowledge, and data relating to the environment so as to provide information needed to support environmental decisions in a timely manner and in a usable form." The system was expected to be composed of a central, computerized facility.

All Federal agencies were directed to supply the system with information and data. Both domestic and international sources of information were to be used, through such treaties as would be necessary. The original proposal had designated a five-member board to head the data system.

The Data Bank, functioning under the Council on Environmental Quality, was to provide data to the Council for its annual report on environmental quality and give the Council whatever analysis within its capabilities that was needed. In addition, the information, data and analyses in the Data System were to be made available on request without charge to Congress and all agencies of the legislative and executive branches of the Federal Government, and to all interstate agencies, States, and local governments, and universities and colleges, without charge. Private organizations and persons could obtain services from the System upon payment of reasonable fees.

The basic purpose of the data system was to provide a central collection of the widest possible range of environmental information, a focus for all of the diverse and diffuse information collected by the Federal Government and many other public and private organizations. The collection of this data in one system was directed toward the best possible integration of knowledge for use in the analysis of environmental conditions and the consequences of environment-related activities.

History and Progress of the Data System Concept

The proposal was first introduced early in the second session of the 91st Congress. Congressman John Dingell introduced H.R. 17436, and the subcommittee which he chaired, Subcommittee on Fisheries and Wildlife Conservation of the Committee on Merchant Marine and Fisheries, held

hearings in June, 1970, on this and related proposals, ²/all introduced as amendments to the National Environmental Policy Act.

The bill was considered again in the 92nd Congress as H. R. 56. Hearings were again held by the same committee. ²²/This measure passed both Houses. It passed the House, and the Senate added the Environmental Centers bill to it as title II. The amended version passed the conference committee; this measure stipulated a director instead of a board at the head of the system, and added some functions, such as development and publication of environmental quality indicators for all regions of the U.S. and general standards to facilitate integration of existing and new information systems bearing on the environment, to make them cooperative with the central facility established in the Act.

H. R. 56 was vetoed by President Nixon in October, 1972. He cited failure of the measure to provide for a relationship between the general collection of data and specific programs which would assure their productive use. He also indicated that efforts were underway in the Environmental Protection Agency and other agencies to strengthen their ability to handle the data coordination role adequately.

²/ U.S. Congress. House of Representatives. Committee on Merchant Marine and Fisheries, Subcommittee on Fisheries and Wildlife Conservation. "Environmental Data Bank." Hearing, 91st Congress, 2nd Session, on H.R. 17436, H.R. 17779, H.R. 18141. Washington, U.S. Govt. Print. Off., June 2, 3, 25, 26, 1970.

²²/ ----- "Fish and Wildlife Miscellaneous." Hearing, 92nd Congress. On Environmental Data System--H. R. 56, July 28, 1972. Washington, U.S. Govt. Print. Off.

In the 93rd Congress, several bills were introduced, but no action was taken on them, and the concept has not been re-introduced in the 94th Congress.

Rationale for the Data Bank Concept

The idea of the establishment of an environmental data system emerged during the same time period as the other concepts described in this report. This was the late 1960's, early 1970's, when the awakening concern for environmental problems shed light on the problems of gathering the necessary information which would enable appropriate decisions and policies remedying perceived environmental dysfunctions. The data bank proposal was intended to meet the need for information and data which would facilitate the urgently needed policy moves. And it arose at a time when the organizational structure for meeting environmental needs and formulating policies were new or as yet unformed. The argument that a central collection point was needed for the extremely diverse and wide-ranging information related to environmental matters had validity in that context. Some observers contend that it has even more validity now; as the environmental organizations have increased their activities, there has been a correlated increase in the number of data being collected; the information explosion in environmental and natural resource areas (energy, for example) has made a central collection point even more essential, it is argued. At present, there is still no central system in which the many types of information being collected can be integrated and brought to bear on problems which cross many disciplinary lines.

The arguments in favor of creating a comprehensive viewpoint for environmental planning and research have been repeated in connection with the other concepts described here. The reports cited made a central point of this argument. This was largely connected to these other concepts, but these points of contention should be remembered in the context of the data system. They will not be repeated here, but in many cases, they would apply equally to the data system proposal.

Former Secretary of the Interior Stewart Udall strongly favored the data bank legislation. He cited the extreme difficulty he encountered at Interior in bringing data or information together in "an organized, rational way" and endorsed the data system in these words:

When I look at the overall picture, the rapid strides that we have been making in recent years, it does seem to me that this is a very logical next step after the enactment here last year of the Environmental Policy Act...providing this kind of information, data bank capability, that does not exist in this country today. I think that is a very vital second step, and I simply want to lend my voice as one who feels that if this is done in the right way it can be a very useful tool and it can be very effective. */

Commenting on the value of a computerized environmental data system, Dr. James Shrewsbury, Director of Research, Murray State University, Murray, Kentucky, said:

It is essential that a central repository for data and information processing systems to be used in environmental management, have these in computer-compatible form and format. The environment being the highly complex and dynamic system it is, only a data storage, retrieval, and processing facility operating at electronic computer speeds could approach efficacy. **/

*/ Hearings, 1970, op. cit., p. 240.

**/ Ibid., p. 218.

A Berkeley, California, University ecologist testified to the value of the system, concentrating on the need to get useful output from such a facility:

This is badly needed legislation if the system can get beyond the purely research and scientific storage point. Our concern at the Ecology Center in Berkeley is output, conversion, and output of scientific information. We have found and, in fact, the early premise of the Center was that there was plenty of scientific information available, but very little of it was actually getting to the public in an appropriate form. */

Several witnesses at the hearings made the point that good planning and decision-making depends upon a reliable and sufficiently broad information base. They felt that along with increased research and improved policy-making structures, there should be a facility such as the data bank to provide the context for assimilating research and information into a meaningful framework for use in decision-making.

Opposition to the measure was voiced by all witnesses from the Federal agencies. The on-going environmental data sources were felt by some to be the appropriate focus for expanded activity in this area; others voiced the concern for the enormous complexity of the task of collecting "all" environmental data in once place and making it usefully available.

Dr. T.C. Byerly, Assistant Director of Science and Education at the U.S. Department of Agriculture, indicated "we believe that without much reduced scope of content, effective national data bank operation probably could not be achieved at a reasonable total cost within the current state of the art." **/ And Dr. Joseph A. Lieberman, Assistant Administrator for

*/ Ibid., p. 105.

**/ Ibid., p. 227.

Research and Development, Environmental Health Service in the U.S. Department of Health, Education, and Welfare, commented that without a definition of "environment" the system could be universally encompassing--going beyond any realistic expectations for achievement.

Summary: The Environmental Data Bank Concept

The proposal for a national environmental data system which would encompass the widest possible range of all environmental information and data from Federal agencies, State and local sources, and private and academic sources, emerged along with the other research and policy proposals of the early 1970's. Coupled with the State Environmental Centers Act, it passed the Congress in 1972, but was vetoed by President Nixon. Although the measure was re-introduced in the 93rd Congress, no action has been taken on this proposal since then.

The Data Bank was seen by its proponents as a vital link in the decision-making process, especially in processes which could include long-range planning for environmental issues. Only if the appropriate information is available, the proponents contended, and only if the information is integrative of the widest range of data, can environmental planning and decisions be meaningful over extended time periods.

Since the Data Bank proposal was first forwarded, the environmental organization structure of both Federal, State and lower levels of Government has increased greatly. Far more data are being gathered and incorporated into decision-making. However, there is still no recognized focal point where comprehensive integration of these data occurs. Whether this is feasible remains an unanswered, and at present, unasked question.

COUNCIL ON ENVIRONMENTAL QUALITY and THE
OFFICE OF ENVIRONMENTAL QUALITY

During 1970 two new organizational units were established with purposes related to organizing environmental information and relating it to policy and program needs. These were the Council on Environmental Quality (CEQ), established by title III of the National Environmental Policy Act (NEPA) which was signed into Public Law 91-190 on January 1, 1970; and the Office of Environmental Quality, established in title II of the Federal Water Pollution Control Act Amendments of 1970 which was signed into Public Law 91-224 on April 3, 1970.

The Council on Environmental Quality is an advisory unit in the Executive Office of the President, and is composed of three Presidentially appointed members and a small staff. The Office of Environmental Quality was originally conceived with a purpose much like that of the Council; however, upon enactment of NEPA in late 1969, the proposed office was reshaped to serve as a complement to the CEQ, basically to provide the staffing for it. The Office has never taken a discrete organizational form, and the concept survives only as partial staffing justification for CEQ.

The Council has these functions: (1) to assist and advise the President in the preparation of the Annual Report on Environmental Quality required by section 201; (2) to gather timely and authoritative information concerning the conditions and trends in the quality of the environment, both current and prospective, to analyze and interpret such information for the purpose of determining whether such conditions and trends are interfering, or likely to interfere, with the achievement of the policy set forth in title I of this

Act, and to compile and submit to the President studies relating to such conditions and trends; (3) to review and appraise the various programs and activities of the Federal Government in the light of the policy set forth in title I of this Act for the purpose of determining the extent to which such programs and activities are contributing to the achievement of such policy, and to make recommendations to the President with respect thereto; (4) to develop and recommend to the President national policies to foster and promote the improvement of environmental quality to meet the conservation, social, economic, health, and other requirements and goals of the Nation; (5) to conduct investigations, studies, surveys, research, and analyses relating to ecological systems and environmental quality; (6) to document and define changes in the natural environment, including the plant and animal systems, and to accumulate necessary changes or trends and an interpretation of their underlying causes; (7) to report at least once each year to the President on the state and condition of the environment; and (8) to make and furnish such studies, reports thereof, and recommendations with respect to matters of policy and legislation as the President may request.

In addition to these general functions, a major responsibility of the Council is the preparation of the President's Annual Environmental Quality Report, which must include a description of the status and condition of the major natural, manmade, or altered environmental factors, including air quality, water quality, land variables, and others. The Council is also required to include the current and foreseeable trends in the quality, management and utilization of these environments and the effects of these trends in the

social, economic and other areas of concern of the Nation. A review of existing environmental programs at all governmental levels and a proposed program for remedying deficiencies in these are also to be included in the annual report.

In the Senate report on the National Environmental Policy Act^{*} the Council (termed the "Board" in the early legislation) was given a primary duty to serve an "early warning" function for environmental problems:

Title III establishes an independent, high-level, three-member Board of Environmental Quality Advisers in the Executive Office of the President. The Board is patterned very closely after the Council of Economic Advisers which was established by the Full Employment Act of 1946.

The Board's function is to provide a continuing study and analysis of environmental trends and the factors which affect these trends, and to relate each area of study and analysis to the social, economic, health and conservation goals of the Nation. The Board will provide an overview of how effectively the Nation is maintaining a quality environment for future and present generation. In addition, it will be uniquely equipped to serve an early warning function by identifying emerging environmental problems at an early date so that proper responses may be prepared before situations reach crisis proportions and before the costs of dealing with problems grow large. ^{**/}

This responsibility was reiterated by the report in explaining the functions of the "Board":

The primary function of the Board shall be to carry on continuing studies and analyses related to the status of the environment. The Board will seek to establish or cause to be established within the operating agencies of the Federal Government an effective system for monitoring environmental indicators, collecting data, and analyzing trends. It will further seek to relate trends in environmental conditions to short- and long-term national goal and aspirations. ^{***/}

^{*}/ U.S. Congress. Senate. Committee on Interior and Insular Affairs. National Environmental Policy Act of 1969, To Accompany S. 1075. 91st Congress, 1st Session. Report No. 91-296. July 9, 1969.

^{**/} Ibid., p. 10.

^{***/} Ibid., p. 24.

In carrying out this responsibility, the "Board" was described as being "authorized to obtain information from all existing sources concerning the quality of the environment. The Interior Committee intends and fully expects that all Federal agencies will cooperate and provide any assistance and information necessary to enable the Board to fulfill its duties and responsibilities under this Act."

Thus, although the Board was given responsibilities in the Senate version to analyze trends, detect early signs of environmental problems, and to formulate proposed courses of action to remedy them, it was given authority only to obtain information from other sources. It was not seen as a generator of research or information.

However, in the final version of the bill which was enacted, functions no. 5 and 6 (quoted above) were added--the conduct of investigations, studies, surveys, research and analyses relating to ecological systems and environmental quality; and the documentation and definition of changes in the natural environment. The emphasis on generation of information was made clear in these provisions.

The authorization for funding was put at a limit of \$300,000 for 1970, \$700,000 for 1971, and \$1,000,000 for each succeeding fiscal year.

The Office of Environmental Quality was originally conceived as an independent effort, and the legislation to establish it was developed by the Senate Public Works Committee during the same time period in which the Senate Interior and Insular Affairs Committee was preparing the legislation which became the National Environmental Policy Act (NEPA) creating the Council on Environmental Quality.

The NEPA was enacted three months before the Public Works Committee's "Environmental Quality Improvement Act of 1970" which was attached at title II to the Water Quality Improvement Act of 1970, amending the Federal Water Pollution Control Act. Therefore, in the discussions in Committee which followed enactment of NEPA on the act establishing the Office of Environmental Quality, it was decided to make this office complementary to the Council on Environmental Quality which was already enacted in the NEPA.

As finally agreed upon in the Act, the Office had these functions: (1) providing the professional and administrative staff and support for the Council on Environmental Quality established by Public Law 91-190; (2) assisting the Federal agencies and departments in appraising the effectiveness of existing and proposed facilities, programs, policies, and activities of the Federal Government, and those specific major projects designated by the President which do not require individual project authorization by Congress, which affect environmental quality; (3) reviewing the adequacy of existing systems for monitoring and predicting environmental changes in order to achieve effective coverage and efficient use of research facilities and other resources; (4) promoting the advancement of scientific knowledge of the effects of actions and technology on the environment and encourage the development of the means to prevent or reduce adverse effects that endanger the health and well-being of man; (5) assisting in coordinating among the Federal departments and agencies those programs and activities which affect, protect, and improve environmental quality; (6) assisting the Federal departments and agencies in the

development and interrelationship of environmental quality criteria and standards established through the Federal Government; (7) collecting, collating, analyzing, and interpreting data and information on environmental quality, ecological research, and evaluation.

The Director is authorized to contract with public or private agencies, institutions, and organizations and with individuals without regard to sections 3648 and 3709 of the Revised Statutes (31 U.S.C. 529; 41 U.S.C. 5) in carrying out his functions.

In the Senate report on the Office of Environmental Quality, it was stated: "An Office of Environmental Quality would provide the independent staffing required by the Council and would make available to the President the professional competence and facilities necessary to the substantive review and analysis of all matters relating to the environment. In addition, the Office would be required to report on environmental issues to Congress, the Council, and the public."^{*/}

The authorized funding for the Office was specified at \$500,000 for the fiscal year ending June 30, 1970, \$750,000 for the following year, \$1,250,000 for the year after that, and not to exceed \$1,500,000 for each succeeding year. It specified that these authorizations were in addition to those contained in Public Law 91-190 (NEPA) for the Council on Environmental Quality.

The chairman of the CEQ was designated as Director of the Office.

^{*/} U.S. Congress. Senate. Committee on Public Works. Amending the Federal Water Pollution Control Act, as Amended, and for other purposes. Report to Accompany S. 7. 91st Congress, 1st Session. Senate Report No. 91-351. p. 41.

As it has developed, the Office of Environmental Quality has not taken any organizational form distinct from the CEQ; in the budget, the amounts authorized for CEQ and the Office are combined, and both authorizing laws are cited for the resulting \$2.5 million appropriation requests.

The creation of CEQ and the impulse behind formulation of the Office of Environmental Quality concept responded to the need felt during the 1970's for a comprehensive organizational focus for environmental problems. Other laws addressed specific aspects of environmental quality, such as air or water quality, and gave them to specific organizations, such as the Environmental Protection Agency. But the comprehensive view was still needed. The environmental policy institute, the environmental data bank concept, the regional or state centers concepts were all born at this time or soon thereafter.

The only entities enacted into law, however, were the Office and the CEQ. The CEQ mandate to conduct investigations, studies, surveys, research, and analyses relating to ecological systems, and its responsibility to document and analyze changes or trends in the natural environment, give to the Council wide latitude in pursuing some of the purposes of the organizations proposed in the other, still pending legislation for the Environmental institute, data bank and others. However, with its relatively limited resources, the CEQ has not been able to pursue active investigations across a wide range of environmental problems, and has had to choose a limited number of areas in which to contract studies. Its role in comprehensive environmental research and data collection has been

limited. Its primary function has been the collection and dissemination of existing information, oversight of the environmental impact statement processes, and the compilation of the Annual Environmental Quality Report.

In its report at the end of 1974, the CEQ admitted that in the area of data and predicting environmental trends, present efforts are inadequate:

As stated in the introduction to this chapter, there is a critical need for accurate and timely information about environmental conditions and trends, in order that important decisions affecting environmental quality and natural resources can be made on the most informed basis possible....

In CEQ's previous Annual Reports and other studies, attempts have been made to (1) develop and provide these kinds of interpretive analyses and (2) report on progress in developing environmental indices and indicators as potential practical tools by which environmental assessments could be effectively communicated to the public. Other Federal agencies also have contributed to this effort. In general, however, the response of both the Federal Government and the scientific community to this important need and mandate have been inadequate. Both the National Academy of Sciences and the Library of Congress have recently concluded that environmental indices and other interpretive tools are feasible and much needed; that previous efforts have been inadequate; and that an intensified Federal effort is needed in this area. */

The report went on to say:

CEQ will continue its efforts in the development of interpretive techniques related to air quality, water quality, land use, and ecological conditions and trends. However, no Federal committee or small staff agency can adequately accomplish this task without considerable help from the scientific community and support from the agencies that are primarily responsible for acquiring or assimilating environmental data....

After indicating the need for increased activities in this area by several specific agencies, the report said:

*/ Council on Environmental Quality. The Fifth Annual Report of the Council on Environmental Quality. U.S. Government Printing Office, Washington, D.C., December 1974. pp. 331-332.

Failure to meet these needs will result not only in less informed decisions about environmental quality, but also in some misdirection of resources expended on environmental monitoring and data processing. */

Therefore, although the CEQ and the Office of Environmental Quality were established as the only comprehensive organizational response to the widely perceived need in the early 1970's for such an entity, the CEQ itself would evaluate its ability to perform environmental studies and forecasting as far short of adequate in terms of the needs in this area. The CEQ is not equipped or organized to perform the environmental research or studies proposed for the Environmental Institute described earlier in this paper, or to perform the functions of the proposed Data Bank.

*/ Ibid., p. 334.

GENERAL SUMMARY

The period since 1970 has been one of significant activity in forwarding institutional proposals for environmental research, data collection, education, and policy analysis. The major proposals, for the National Environmental Policy Institute, the National Environmental Laboratories, the National Environmental Data Bank, and the State and Regional Environmental Centers, were the focus of considerable congressional interest and activity.

Several new institutions with environmental policy and research responsibilities were established, both through congressional action and through Administrative action. The main ones are the Council on Environmental Quality and the Environmental Protection Agency (EPA). The Council was given a very broad mandate, with opportunities provided for research, investigations, data collection, comprehensive environmental evaluation and other related functions. The EPA was not discussed in this report, since its purposes were framed more specifically, including mainly areas other than research and planning. EPA was established to perform regulatory functions in enforcing and implementing major pollution control efforts of the Federal Government. It has been given many specific areas in which to carry out these duties: air quality, water quality, solid waste, noise control, pesticide regulation, and others. Its research and planning functions, however, are directed toward these particular functions. Although its research program is problem-specific and does not include a comprehensive role, the expansion of it has meant that the agency is collecting information and doing research in many areas of critical environmental concern, and thus the argument has often been forwarded that EPA is equipped to perform the broader data collection tasks envisioned in some of

the proposals described in this report. However, the agency is not designed to serve these purposes primarily.

A recurrent theme in the rationale behind each of the proposed and enacted organizational entities was the critical need for a long-range perspective in evaluating environmental problems and consequences for the environment of national policies. And essential to that long-range perspective, it was argued by the proponents of these proposals and institutions, were more research, greatly expanded data collection, more complete policy analysis. And more importantly, the performance of these functions, it was argued, must be done in organization with a comprehensive capacity to make the many and complex interconnections required by the nature of environmental problems.

The very complexity of work to be performed in the needed institutions seems to have served as one of the stumbling blocks to their establishment. And the only comprehensive institution enacted, the Council on Environmental Quality, has been given very limited resources, thus preventing extensive work in the areas where they are authorized to operate. At present, the Council is an advocate of better and far more extensive data collection, forecasting ability, and environmental research.

In general, the long-range perspective and capability deemed to be essential in avoiding environmental crises by those who forwarded the proposals described in this report has yet to be established in the view of those who saw the need.

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SUMMARY TABLE:

Major Institutional Proposals for Environmental Planning or Research

Institution or Proposal	Functions	Organizational Form	Reports to	Funding	Legislative Historical Status
National Environmental policy institute	Policy analysis; policy- oriented research; De- velopment of alternative solutions for existing emerging problems.	11-member board of directors; including top Federal Environ- mental officials and others. 200 to 300 professional staff.	Independent; Does con- tract work for agencies, and also generates own research and reports.	Federal grant \$10 mil- lion per year, \$5 mil- lion matching funds; Funding from non- Federal sources-- public and private.	Introduced in 92d (S. 1216), 93d (H.R. 14468) and 94th (H.R. 75) Congresses. Received Administration backing temporarily in 1971. Never voted on in Congress.
National environmental laboratories	Basic and applied re- search--multidisci- plinary; data storage and collection, data analysis and synthesis.	Board of Trustees-- including 4 top Federal environmental officials and 5 others; one to four laboratories modeled after AEC national labs.	Independent of any one Federal agency.	Federally established Trust fund of \$250 million, annual appro- priations of \$200 mil- lion for each lab, and grants and contract money from other Fed- eral and non-Federal sources.	Introduced in 91st (S. 3410), 92d (S. 1113); Passed Senate only in 92d Congress; No further action.
Regional or State environmental centers	Basic and applied re- search.	Possible establishment of designated center in each state or in combinations of states --under direc- tion of existing aca- demic or research in- stitution. Over-all coordination of "En- vironmental Centers Research Coordination Board" headed by EPA Administrator.	Assistance program ad- ministered by EPA Ad- ministration who over- sees program develop- ment in centers.	Federal Funds for as- sistance--\$1.7 million escalating to \$34 mil- lion per year.	Introduced in 92d Con- (S. 681); passed as Title II of H.R. 56-- This was vetoed; Passed Senate in 93d Congress (S. 1865). Introduced in 94th Congress (S. 761 and H.R. 35)--no action.

Institution or Proposal	Functions	Organizational Form	Reports to	Funding	Legislative Historical Status
National environmental data system	Collection, storage, dissemination of en- vironmental data.	Central computerized facility; director.	Council on Environ- mental Quality	Federal appropriations- \$1 million escalating to \$3 million annually.	Introduced in 91st Con- gress (H.R. 17436). Passed 92d Congress (H.R. 56); vetoed. 93d Congress reintroduced, but no further action.
Council on Environmental Quality	Prepares annual re- port on Nation's en- vironmental quality, policy analysis and formulation, informa- tion gathering, con- duct investigations and research on en- vironmental quality.	3-man council.	The President	Federal appropria- tions--\$2.5 million per year.	Enacted in 91st Congress (P.L. 91-190).

COMPARATIVE ANALYSIS OF SELECTED
ORGANIZATIONAL ARRANGEMENTS FOR
LONG-RANGE PLANNING AND STRATEGIC
ASSESSMENT IN THE FEDERAL GOVERNMENT

COMPARATIVE ANALYSIS OF SELECTED ORGANIZATIONAL ARRANGEMENTS
FOR LONG-RANGE PLANNING AND STRATEGIC ASSESSMENT
IN THE FEDERAL GOVERNMENT

The current Congressional interest in planning as a tool for governmental management has given rise to a number of proposals for establishing improved policy planning capabilities in the Federal Government. As an aid to Congressional consideration of legislation dealing with planning for environmental matters, this study presents a comparative analysis of some of the principal historic and proposed approaches to structuring a long-range comprehensive planning capability for the Federal Government as a whole. The aim of the study is to offer an analytic background against which to consider proposals for more functionally focused long-range environmental planning—proposals such as those that are discussed elsewhere in this compilation.

Background

The idea of national planning emerged as an intellectual and political issue in America during the 1930's, the decade of the Great Depression. Much of the leadership of the national planning movement came out of the field of city and regional planning, a field that had grown during the reformist efforts during the early 20th century and that had counted, perhaps surprisingly, Herbert Hoover among its allies.^{1/}

^{1/} Herbert Hoover's leadership while he was Secretary of Commerce under Warren Harding had led to the Standard State Zoning Enabling Act of 1924, a model for the States to follow in order to enable local governments to enact local zoning ordinances.

Engineer and railroad executive Fredrick Delano, whom President Roosevelt appointed chairman of the National Resources Planning Board, was a leader in the creation of the Burnham plan for the city of Chicago and in the development of the metropolitan regional plan for New York in the 'twenties. Charles Merriam, also appointed by FDR to the National Resources Planning Board, was a member of the Chicago city council during the years before World War I, a leader of the Chicago reform movement as well as of the American Political Science Association, founder of the Social Science Research Council, and professor and chairman of the Department of Political Science at the University of Chicago; and he was an important participant in a landmark conference to promote research and instruction in city and regional planning.

Despite its origins in city and regional planning, the leadership of the national planning movement in the 'thirties was not limited by the matrix from which it had sprung. It had a grander vision—a vision of planning as a central part of the national policy of the country.^{2/}

Although the governmental institutions for planning that grew out of the New Deal—the National Resources Planning Board, the National Recovery Administration, the Agricultural Adjustment Administration, and the Fiscal and Monetary Board have disappeared leaving behind few if any traces, they are of considerable historic interest from an organizational point of view.

^{2/} See, for example, the remarks of presidential candidate Franklin Roosevelt on the occasion of the publication of the New York Regional Plan at the end of 1931. Quoted in Lepawsky, Albert. *The Planning Apparatus: A Vignette of the New Deal*. Journal of the American Institute of Planners. Jan. 1976. p. 22.

The planning idea has occasionally reemerged and has given rise to organizational entities such as the National Security Council and the Domestic Council, as well as to efforts to reorganize the Executive Branch along functional lines in order to facilitate policy planning and coordination.^{3/} It is only relatively recently, however, that there have appeared a series of major proposals for improving the planning capabilities of the Federal Government. Some of these proposals have taken the form of legislation introduced by Members of Congress; some have been proposals made by scholars working under a variety of auspices.

This study examines some of the principal historic and proposed approaches to planning and policy analysis in the Federal Government, comparing them using a common framework to the fullest extent practicable.

Framework for the Analysis

Most of the examples that will be discussed in this study are proposals for planning and strategic assessment institutions that would aim at a comprehensive approach to long-range policy planning in government. That is to say, they are in the main not directed to planning in any single, particular functional area such as environmental planning, health care planning, or public works planning. Some, however, are focused on matters of national economic planning. Therefore, in the discussion of each example

^{3/} See, for example, U.S. Executive Office of the President. Office of Management and Budget. Papers Relating to the President's Departmental Reorganization Program. A Reference Compilation. Washington, U.S. Govt. Print. Off., March 1971.

the scope of the planning work that would be required is set forth. What type of planning and policy analysis would be undertaken? What functional areas would be included within the scope of its work? What degree of comprehensiveness would be attempted? What sort of mandate would the proposed institution be given?

The organizational structure of the proposed planning institution is of special interest. What would be its principal organizational elements? How would they relate to one another? Where would the proposed institution be located with respect to the Executive and Legislative Branches of government? What would be its expected role in the Executive decision making process, i.e., how would the planning relate to action? What contribution would the proposed institution make to the legislative process?

The top management of any planning organization is critical in the carrying out of the planning process. How would the top managers of the proposed institution be chosen? What would be their tenure? What are the implications of their method of selection for the overall functioning of the organization? To whom would they be answerable?

A third critical matter is that of funding. What would be the source of funds to support the proposed planning work? Who would control the institution's pursestrings? To what extent would this tend to politicize the planning institution's work, especially its ability to give primary attention to long-range policy issues?

A fourth matter of interest is the planning process that would characterize the planning institution's work. To what degree is a process

specified in the proposal? What information sources would the institution have access to? What provisions would be made for communications between the Federal planning institution and State and local governments and the private sector?

Finally, what work product would be required of the proposed planning agency? What would be the function of the product in the policy-making process?

THE NATIONAL RESOURCES PLANNING BOARD
(NRPB)

Background

The National Resources Planning Board was the final attempt by the Roosevelt Administration to institutionalize Federal planning in one comprehensive agency. The NRPB was the successor of a series of short-lived planning organizations established in the Executive Branch in an effort to strengthen its policy planning and coordination capabilities. Its predecessor organizations were the National Planning Board (NPB), the National Resources Board (NRB), and the National Resources Committee (NRC).

The National Planning Board was established within the Public Works Administration with the purpose of planning and coordinating Federal works activities, but with a longer-term aim. Interior Secretary Harold Ickes, within whose jurisdiction the Public Works Administration fell, said—

"We hope that long after the necessity for stimulating industry and creating new buying power by a comprehensive system of public works shall be a thing of the past, national planning will go on as a permanent government institution." ^{4/}

After the Supreme Court declared the National Recovery Administration unconstitutional, the President reconstituted the planning function of the NPB by creating the National Resources Board. Under the provisions

^{4/} Ickes, Harold L. Federal Emergency Administration of Public Works. Planning and National Recovery (1933). p. 22. Quoted in Mel Scott. American City Planning Since 1890. Berkeley, University of California Press, 1971. p. 302.

of Executive Order 6777 of June 30, 1934, the NRB's function was to prepare and present to the President a program for the development and use of land, water, and other resources. On June 7, 1935, the NRB was abolished and reconstituted with expanded functions as the National Resources Committee. The NRC's job was not to develop a specific program, but to aim toward an improved planning process. Its duties as set forth in Executive Order 7065 were as follows:

(a) To collect, prepare and make available to the President, with recommendations, such plans, data and information as may be helpful to a planned development and use of land, water, and other natural national resources, and such related subjects as may be referred to it by the President.

(b) To consult and cooperate with agencies of the Federal Government, with the States and municipalities or agencies thereof, and with any public or private planning or research agencies or institutions, in carrying out any of its duties and functions.

(c) To receive and record all proposed Federal projects involving the acquisition of land (including transfer of land jurisdiction) and land research projects, and in an advisory capacity to provide the agencies concerned with such information or data as may be pertinent to the projects. All Executive agencies shall notify the National Resources Committee of such projects as they develop, before major field activities are undertaken.

In 1939, the NRC was abolished and its functions assumed by the National Resources Planning Board within the newly formed Executive Office of the President.^{5/}

^{5/} The Executive Office of the President was created by Reorganization Plan No. 1 of 1939. The reorganization went into effect on July 1, 1939.

Authority for the National Resources Planning Board

The reorganization plan that established the National Resources Planning Board was prepared pursuant to the provisions of the Reorganization Act of 1939. Part 1 of the reorganization plan established the Executive Office of the President, of which the NRPB was an element.

Scope of Its Planning Work

The planning responsibilities of the newly constituted NRPB were basically the same as those of its predecessor, the NRC. It also assumed the responsibilities of the Federal Employment Stabilization Office, which was charged with advising the President on employment and business trends and on the existence or approach of periods of business depression and unemployment.

Organizational Structure

The NRPB was made a part of the Executive Office of the President, without any direct relationships to individual Executive agencies. That is to say, it was not subordinated within an individual line agency as had been its ancestor, the National Planning Board, which was within the Public Works Administration of the Interior Department.

The Board, which was to work under the direction and supervision of the President, had five presidentially appointed members. One was designated by the President as chairman; another, as vice chairman.

The reorganization plan authorized the Board to determine the rules of its own proceedings and to appoint a staff of employees and officers

and to authorize its officers to perform such duties and to make such expenditures as may be necessary. In addition to the five-man board, the NRPB had several technical committees established from time to time to study land, water, and energy resources; industry; transportation; science; population; urbanism; local planning; public works; and relief; and the board established an eleven-district field structure. By 1943 its staffing level had grown to 150 employees in the Washington office and 72 employees in the field; and the staff was supplemented by 35 per diem consultants.^{6/}

Organizational Relationships

Clearly, the NRPB was the creation of the President, and he had its loyalty. Although he had hoped that the NRPB would help him get an administrative handle on the New Deal's disjointed bureaucracy, it did not meet this expectation; and the President is said to have looked elsewhere when immediate national problems were his concern. The Bureau of the Budget, for example, was more concerned with the more immediate future. With its long-range planning viewpoint, the NRPB was seen by the president as a long-distance "intellectual spearhead."^{7/}

There was little direct contact between the NRPB and the line agencies of the Executive Branch, simply because of the separation be-

^{6/} Beckman, Norman. Federal Long-Range Planning. The Heritage of the National Resources Planning Board. Journal of the American Institute of Planners. Vol. 26, No. 2. May 1960. p.90.

^{7/} Ibid. p. 91.

tween the Board, its field structure and long-range planning interest on the one hand, and the administrative mandates and field structures of the line agencies on the other. Most line agencies were cooperative with the Board since it was not a regulatory agency and since it did not make direct and formal efforts to get its recommendations implemented. It rarely made specific recommendations to the President; its discussions with him were on broad matters; and its approach was advisory. It did generate some degree of friction with a few agencies, however, because of its review of public works projects. The Corps of Engineers, the Tennessee Valley Authority, the Forest Service, and the Reclamation Bureau, for example, were resentful of an NRPB role as early as 1934 because of a NRB study called "A Plan for Planning." They saw the Board as a threat and feared that "some board of five professors [was going] to decide where the dams would be built, the swamps drained, the trees planted."^{8/}

The NRPB did not have close relationships with Congress, nor did the Board seek such relationships since it saw itself as a staff support to the Presidency. Its lack of friends in Congress left it vulnerable to criticism and attack from those who saw it as duplicative of other agencies and as a harbinger of socialism. Its vulnerability was increased by the lack of any corresponding congressional committee to whom it could relate as the Council of Economic Advisors relates to the Joint Economic Committee.^{9/}

^{8/} Graham, Otis L., Jr. *Toward a Planned Society*. New York, Oxford University Press, 1976. p. 54.

^{9/} Beckman. *Op. cit.* p. 92.

Funding

As part of the Executive Office of the President, the NRPB depended upon Executive Branch - Legislative Branch independence and comity to assure funding for the Board's work; as long as the President supported that work and requested the funds, the necessary support was made available.

Track Record

Observers of the National Resources Planning Board have noted several achievements which deserve enumeration here. First, the Board produced a number of studies on river basin development, land policy and planning, energy resources, population, housing, transportation, unemployment insurance, and others. Second, State-level planning was stimulated by the Board's field and consultant activities; during the life of the Board, the number of State planning agencies grew from three to thirty-five. Third, the Board successfully stimulated an increased degree of local-State-Federal cooperation through its promotion of river basin planning.

On the other hand, it was not without its failures. First, because of its close relationship to the President, the objectivity which it claimed was not entirely credible. Second, it was never entirely clear what the subject of the Board's planning effort was to be. Third, some observers assert that the Board showed poor political judgment in its timing of releases of controversial reports. Fourth, the Board's inability to produce concrete results or to significantly affect policy alienated many in Congress and in the executive bureaucracy.^{10/}

^{10/} The track record of the NRPB is discussed in more detail in Beckman, Op. cit. p. 92-94.

THE TUGWELL PROPOSAL FOR A NEW CONSTITUTION

Background

In September 1970 the Center for the Study of Democratic Institutions announced the completion of a proposal for a new national constitution, which was drafted by Rexford Guy Tugwell, former FDR brain trustee and governor of Puerto Rico. The proposal would place the long-range planning function in a separate branch of the National government. The Planning Branch would be one of six branches that would replace our present three branches of government. These six would be an Executive Branch, a Legislative Branch, a Judicial Branch, a Regulatory Branch, an Electoral Branch, and a Planning Branch.

Authority

Creation of a Planning Branch in the Federal Government would require a radical amendment of the Constitution. In Tugwell's proposed amendment—replacement would be a better term—the authority for the new Planning Branch is found in Article III.^{11/}

Organizational Structure

The planning function would be embodied in the Planning Branch which would have a Planning Board and a Planning Department.

The Planning Board would be made up of eleven members appointed by the President. Their terms would be for eleven years.

^{11/} Tugwell, Rexford Guy. Introduction to a Constitution for a United Republics of America. Center Magazine. Vol. 3. Sept.-Oct. 1970. p. 19.

The first members of the Board would have terms running from one to eleven years. They would be eligible for reappointment. The chairman of the Board, the member having the longest term, would supervise the Planning Department in its preparation of six- and twelve-year development plans. The chairman also appoints a planning administrator, unless a majority of the Board object, from panels elected by national associations of professional planners which the chairman recognizes. The Planning Administrator would be authorized to appoint deputies, subject to the agreement of the chairman and the Board.

At the sub-national level the Republics, which would replace our present States, would have planning systems which would be linked to the planning processes of the Planning Branch of the national government.

Staggering the eleven-year terms of the members of the Planning Board would tend to shield their functioning from the pressures of the election cycle, allowing it to address itself to long-term matters. The staggering would also make the Board relatively insensitive to pressures from the President, who would have a nine-year term, to support his political program. The character of the Board during its initial years, however, would be largely shaped by the President. But after the system is put into practice he would be able to have a majority of his own appointees only after six years of his nine-year term. Nine of an individual President's appointees would be carried over into his successor's term.^{12/}

^{12/} Tugwell's President would serve only one nine-year term. He could not succeed himself.

Although this organizational arrangement allows the Planning Branch to be free to deal with long-term planning problems, it does raise questions about how well such an arrangement will allow planning to be tied to action—i.e., to the Executive Branch.

Organizational Relationships and the Planning Process

The Planning Department, under the supervision of the Board chairman would be responsible for the preparation of the six- and twelve-year development plans. The chairman would be responsible for presenting these two plans to the Planning Board. In the year before the plans are to take effect, they are to be subjected to public hearings and revisions. On the fourth Tuesday in July they are to be submitted to the President, who is to transmit them to the Senate on September 1 with his comments.

The Planning Department would also be responsible for the preparation of the budget, which would also be submitted on the fourth Tuesday of July to the President. If a majority of the Board is dissatisfied with the budget proposals, the budget would be sent to the President with notation of the individual Board members' reservations. The budget is submitted to the House of Representatives on September 1st with the President's comments, the same day as that of the submittal of the six- and twelve-year plans to the Senate.

The plans would be disseminated for discussion and the opinions generated during the discussion would be considered while plans are being formulated for the succeeding year. There is no language in the proposed constitution, however, that indicates the distribution list for the two plans. This is apparently left to the discretion of the Branches involved.

The plans are to be updated each year, so rather than the six- and twelve-year plans being cast in concrete images of some future state, they are flexible guidelines that express the government's best estimate of the likely state of the nation or the desired direction for the nation to follow over the subsequent six and twelve years.

The President or the Senate or both may object to the two plans' provisions. Should this happen, the plans would be returned for restudy and resubmission. If after restudy and resubmission there are still objections and if the President and the Senate agree in their objections, they would prevail. If the President and the Senate disagree in their objections, the Senate would prevail.

Section 8 of Article III of the proposed constitution would provide a linkage between national and subnational planning — i.e., between the Planning Branch of the national government and the planning systems of the individual Republics. Section 8 says —

The Republics, on June 1st, shall submit proposals for development to be considered for inclusion in those for the United Republics. Researches and administration shall be delegated, when convenient, to planning agencies of the Republics.

This arrangement allows for an integration of national and subnational planning, providing for what is sometimes called "wall-to-wall" subnational planning.

Tugwell would also link the private sector to the national planning process. Article III would authorize the Planning Branch to require inputs from —

private individuals or associations as are affected with a public interest, including those organized as Authorities. They shall report intentions to expand

or contract, estimates of production and demand, probable uses of resources, numbers to be employed, and such other information as may be essential to comprehensive public planning; but there shall be regard for the convenience of those required to make reports.^{13/}

The proposed constitutional language that would establish a national planning process recognizes that there are linkages between national domestic affairs and the nation's foreign affairs:

Section 13. In making plans, there shall be due regard to the interests of other nations and such cooperation with their intentions as may be consistent with plans for the United Republics.

Section 14. The Planning Branch may cooperate with international agencies, making such contributions to their work as are approved by the President. ^{14/}

Work Product

The Planning Branch would be required to prepare annually updated six- and twelve-year plans and an annual budget. The budget would be subject to an expenditure ceiling set by the President.

The two plans are to "represent the national intentions tempered by the appraisal of possibilities."^{15/} The purpose of the twelve-year plan would be to provide a "general estimate of probable progress" in both the government and the private sector. The six-year plan would be

^{13/} Ibid. p. 20

^{14/} Ibid. p. 20

^{15/} Ibid. p. 19

specifically related to estimated revenues and expenditures. Section 5 of the proposed constitutions says —

The purpose [of the planning process] shall be to advance, through every agency of the government, the excellence of national life; it shall be the future purpose to anticipate innovations, to estimate their impact, to assimilate them into existing institutions, or to moderate deleterious effects on the environment and on society.^{16/}

The Planning Branch would also have custody of the official national maps for use as basic reference documents for future public and private development. The maps would indicate the location of existing and proposed facilities and intended land uses. These official maps, which would also be maintained by the planning agencies of the Republics, as would duly approved plans and budgets, be given the force of law by the constitution.

Developments in violation of official designation [on the maps] shall be at the risk of the venturer and there shall be no recourse; but losses from designations preceding acquisition shall be recoverable in actions before the Court of Claims.^{17/}

The budget, which the Planning Branch would prepare, would be "a revision, for the coming year, of the six-year plan, combining estimates for all departments and agencies."^{18/}

^{16/} Ibid. p. 20.

^{17/} Ibid. p. 20

^{18/} Ibid. p. 19

Funding

The proposed constitution specifies the method of funding for the Planning Branch. It does not depend upon the good will of appropriations committees and subcommittees; rather it specifies that one half of one percent of the approved United Republics budget, not including debt service or payments from trust funds, shall be made available to the Planning Branch. The funds are to be held by an officer called the Chancellor of Financial Affairs, but they may be expended according to rules established by the Planning Branch itself.

By earmarking funds for the Planning Branch, the proposed constitution shields the planning process from political pressures that might be applied by way of the appropriations process.

Pros and Cons

Tugwell has made a radical proposal for changing the structure of American government, a proposal that is not likely to be adopted.

However, the document sets in high relief most if not all of the important issues that surround the problem of long-range planning in the national government. If for no other reason, it could be argued that this document is a major contribution to public consideration of these issues. It puts national planning into a separate, independent branch of government; it charges it with long- and middle-range planning and with the preparation of the annual budget, thereby linking long-range policy formulation with short-term budgetary and operational decisions; it shields the planning process from Presidential and Legislative political pressures, while leaving the decision-making powers in the hands of the

elected officials in the Executive and Legislative Branches. And although the Planning Branch is shielded by virtue of its separateness, the proposed constitution allows for Presidential recommendations of plans and courses of action to be taken into consideration by the Planning Branch.

On the other hand, the proposal is such a radical one that it is not likely to make a direct contribution to current efforts to improve the long-range planning capabilities of the Federal Government. It could be argued that it does not fall within the realm of the politically feasible.

THE INSTITUTE FOR CONGRESS

Background

After about three years of planning, the Institute for Congress was formally established in December 1975 in the belief that a new institution was needed to provide the Congress with "timely and independent policy analysis of major policy issues confronting the United States."^{19/} The Institute was launched as a five-year experiment.

Authority

The Institute for Congress is a private, non-profit organization; it has no status as a governmental organization. It is incorporated under the laws of the District of Columbia and is seeking tax-exempt status under the provisions of section 501(c)(3) of the Internal Revenue Code.

Scope of Its Work

Martha W. Griffiths and William D. Ruckelshaus, chairman and vice chairman, respectively, of the Institute's Board of Trustees, presented a joint statement setting forth the rationale for the Institute and defining the scope of its work:

Congress and the entire American society stand at a critical juncture. We have exhausted our "margins of error" in dealing with complex and increasingly technical national policy choices. It is not sufficient for Congress to wait for Executive Branch initiatives, or to entrust

^{19/} Institute for Congress. News release. Sunday, December 7, 1975. p. 1.

analysis of vital national policy choices to its fragmented committee system alone.

We fully believe that Congress cannot hope to become a full, equal partner of the Executive in formulating national policy unless it has available to it superior policy analysis, cutting across committee jurisdictional lines, that lays the factual groundwork, names the options for action, and presents a clear case for alternative policies. ^{20/}

In outlining the elements of the work it hopes to perform, the Institute says that "the research mandate of the Institute would be comprehensive" but that its initial work would concentrate on issues related to "national security, environment and resources, public health, and social and economic implications of new technologies." It says that it would seek to "anticipate issues which will require congressional deliberation."^{21/}

Organizational Structure

The Institute functions under a board of fifteen trustees. Although most of the trustees are private citizens, many of them have held public office in the past. One is currently on leave while he serves as Secretary of Transportation. The majority and minority leaders of both the House and the Senate are to be invited to serve on the board ex officio, according to the Institute.

The Institute for Congress will also have a Congressional Advisory Council, the members of which would be chairmen and ranking members of

^{20/} Ibid. p. 1,2

^{21/} Ibid. Attachment.

selected congressional committees or their designees. The research agenda of the Institute is to be negotiated by the Board of Trustees with the Congressional Advisory Council.

The initial efforts to organize the Institute for Congress were made by a group of five persons who formed the Committee for the Institute for Congress: Alton Frye, James R. Killian, Gordon J. F. MacDonald, Harry C. McPherson, Jr., and Cyrus Vance. The committee, in addition to promoting the concept of the Institute, prepared a list of names as a panel from which to select the Board of Trustees for the Institute. The panel was designed to be balanced geographically and politically. The Board, its chairman and its vice chairman were selected from the panel in close consultation with the Majority and Minority leadership of the Congress. The committee and the congressional leadership sought to apply the criteria of geographic and political balance in making their selection for the Board.

The Congressional Advisory Council has not yet been selected, but it will be chosen in close consultation with committee leadership in the House and the Senate.

The Institute aims at having a professional staff of about 30 during the first year, 60 during the second year, and about 80 in subsequent years. Its staffing strategy is to draw upon outstanding specialists in the issue areas of Congressional interest and then to return them to their former positions outside the Institute upon completion of their task "so they won't sit around the Institute and justify their positions."^{22/}

^{22/} Griffiths, Martha W. Quoted in the Los Angeles Times, January 13, 1976. 4-Part II.

Organizational Relationships

The Institute is intended to provide policy analysis services to the Congress and to the Congress alone. It is not meant to have any service relationship to the Executive Branch.

Internally, the organizational relationships among its basic parts are relatively simple. The policy analysis staff would be subject to the general guidance of the Board of Trustees, who as a result of negotiation with the Congressional Advisory Council would identify and prioritize issues of principal interest and would design the Institute's research agenda accordingly.

Funding

During its five-year experimental period, the Institute will rely on private financial support, mostly from foundations. Its estimated five-year budget is \$22.5 million, of which \$11.5 million would be for the first three years. Beyond the five-year period, funding would come from contracts with Congress, if the Institute's services prove to be of value. If it proves to be of little or no value to Congress in its consideration of national policies, then the effort will come to an end.

The Private Nature of the Institute and Its Access to Information

Since the Institute is a private institution, it would be open to inputs of information or assistance from State and local governments and from the private sector itself. It could conceivably be faced with problems in obtaining information from the Executive Branch, given the sometimes adversarial relationships between the Executive and Legislative Branches. The Freedom of Information Act may ameliorate this type of problem, however.

Pros and Cons

1. The Institute would provide an institutional framework through which the Congress could benefit from top experts in a variety of issue areas.

2. The Institute would have a flexible staffing arrangement to prevent the creation of an entrenched bureaucracy.

3. The Institute would develop its research agenda in close consultation with committee chairmen so that its work would be directly relevant to congressional needs.

On the other hand —

1. The Institute will need to demonstrate that it can be of service to its congressional clients and it will inevitably feel pressures to focus on relatively short-term issues during its 5-year experimental period. This might impair its capacity to deal with long-term issues. If its private funding and lack of dependence on congressional financial support during its early years protects it from such short term pressures, it will probably begin to feel them when it must go to Congress for support.

2. The Institute, it could be argued, is redundant. The Congressional Research Service, the General Accounting Office, the Office of Technology Assessment, and the Congressional Budget Office all have functions, roles, and capabilities parallel to those sought by the Institute. These organizations, already agencies of the Congress, have mechanisms for providing Congress with an opportunity to be involved in the development of their research agendas. Furthermore, these agencies can draw upon outside experts through their contract authorities.

THE PROPOSED OFFICE OF STRATEGIC POLICY ASSESSMENT

Background

The proposal for an office for Strategic Policy Assessment arose from an effort at the Woodrow Wilson International Center for Scholars at the Smithsonian Institution. It is an outgrowth of an unofficials working group under the leadership of Chester Cooper. The proposal would establish an Office of Strategic Policy Assessment (OSPA) in the Executive Office of the President, with a counterpart institution in the Congress—within the Office of Technology Assessment.

Scope of the Work

The proposed Office of Strategic Policy Assessment in the Executive Branch and its counterpart in the Congress would be charged with (1) a continuing assessment of developing social values and preferences; (2) identification of emerging long-term trends and problems; (3) formulation and evaluation of alternative courses of action to deal with them; and (4) evaluation of the effects of actions that are taken. The work would be directed to long-term problems, that is, with a time frame of from five to twenty years, and to problems of a domestic, social nature for which an integrated multi-disciplinary approach is required for their analysis and solution. Policy areas such as water resources, forests resources, work patterns, economic growth, metropolitan growth and development, housing, land use, and environmental policy and their various interactions and impacts on national life would fall within the scope of OSPA's work. Thus, a fairly comprehensive mandate is proposed.

Organizational Arrangements and Functions

An Office of Strategic Policy Assessment would be placed in the Executive Office of the President either as an independent office or under a Deputy Director in the Office of Management and Budget.

In principle, OSPA would be headed by two senior and recognized professionals, one an expert in a field such as environmental sciences, systems analysis, technology, or other "hard" science; the other from one of the "soft" sciences such as political science. One would head the staff; the other would serve as his or her deputy or assistant.

The professional staff would be kept small, from 30 to 50 experts in a variety of disciplines; and it would draw upon outside consultants from time to time to supplement its in-house staff.

OSPA would be organized into divisions focusing on major areas of governmental concern, such as environmental policy, natural resources, science and technology, human resources, and so forth.

The functions of the professional staff would include (1) stimulating, sponsoring, and managing policy-oriented research projects conducted by appropriate government agencies or by outside contractors; and (2) reviewing and commenting upon the annual Presidential budget, major resource allocation decisions made by the Government, the President's Economic Message, energy messages, and major legislation. OSPA's comments would be with regard to long-term implications of Executive proposals.

To avoid isolation of OSPA from other government agencies, a Federal Advisory Board would be established, consisting of senior representatives from "relevant departments and agencies." A non-governmental advisory

would also be organized to achieve communications with the private sector. Membership would consist of representatives from the academic community, foundations, industry, labor, environmental groups, and the like.

The Woodrow Wilson group suggests several possible routes for organizing a Congressional counterpart to the proposed OSPA in the Executive Branch. One way would be to assign such functions to the Joint Economic Committee and to its staff, which would be augmented and strengthened for strategic policy assessment. Another route would be to establish a new joint committee of Congress for the purpose. The group recommends, however, that a Congressional OSPA be placed in the Office of Technology Assessment.

The group asserts that the strategic policy assessment function would fall within OTA's existing mandate from Congress, that OTA's Board is comparable to a joint committee of Congress that could oversee the work and agenda for strategic policy assessment.

The Woodrow Wilson group recommends establishing a distinct entity in OTA with a strategic policy assessment function, under a Deputy Director.

Funding

The group estimates that an annual budget of from \$2.5 to \$5 million would be required for research and consultant support if Congress is to be suitably served by OTA in the area of strategic policy assessment.

THE PROPOSED BALANCED NATIONAL GROWTH AND DEVELOPMENT ACT OF 1974
S. 3050, 93d Congress

Background

On February 25, 1974, S. 3050 was introduced in the 93d Congress by Senator Hubert H. Humphrey. A similar bill was subsequently introduced in the House of Representatives by Rep. George Brown.

Scope

Title I declares that "in order to promote the general welfare and to improve the quality of life and standard of living," it is the responsibility of the Federal Government in conjunction with State and local governments to undertake the development of a balanced national growth policy. Title I further declares that the incorporation of "economic, social, environmental, and other appropriate considerations" is in order. Hence, the intended scope of the proposed Balanced National Growth and Development Act is broadly comprehensive.

Organizational Arrangements

S. 3050 would provide for the creation of ten new organizational forms — the Office of Balanced National Growth and Development, the Council on Balanced National Growth and Development, regional offices of the Council, the Agency for Population and Demographic Analysis, multi-State regional planning and development commissions, multi-State citizens councils, the National Citizens Council on the American Future, the Foundation on the American Future, the Joint Committee on Balanced National Growth and Development, and the Congressional Office of Policy and Planning.

The Office of Balanced National Growth and Development would be established in the Executive Office of the President. It would be administered by a Director and a Deputy Director who would be appointed by the President by and with the advice and consent of the Senate. Its functions, which would be carried out under the supervision and direction of the President and with the advice of the Council on Balanced National Growth and Development are as follows:

- (1) the policy direction and coordination of all Federal and federally assisted programs for planning and land use development, programs designed to improve human resources, programs designed to allocate resources, and programs designed to develop, allocate, or conserve energy resources, within the departments and agencies of the Government designated by the President, the effectuation of such policy direction and coordination, and a system of standard definitions and common sources of data for such activities;
- (2) the preparation of an annual report, to be known as the Annual Report on Balanced National Growth and Development, detailing the progress made in carrying out the provisions of this Act, and containing the President's evaluation and recommendations regarding future needs in this regard;
- (3) such additional studies and analyses and such reports as the President and the Congress might require;
- (4) the assessment of national needs, goals, and priorities;
- (5) the evaluation of effects of present and proposed Federal tax incentives and State and local government tax policies upon the private industrial mix and location in the context of balanced national growth;
- (6) the evaluation of all present and proposed Federal credit programs;
- (7) the evaluation of the effects of fiscal and monetary policy and such other economic stabilization tools as may be adopted upon employment, changes in income, and the composition of economic production in the Nation and its regions;
- (8) the evaluation, or review of evaluation made within departments and agencies, of effectiveness of present and proposed

programs, with respect to all benefits, costs, and incidence thereof;

(9) the assignment of goals, plans, and programs to departments and agencies generally;

(10) in coordination with the Office of Management and Budget, the development of three-, five-, and ten-year planned program projections;

(11) the evaluation of regional resources and human resources in relation to projected development or stabilization;

(12) the evaluation of available renewable and nonrenewable national resources and management and conservation efforts relating thereto;

(13) the analysis of tradeoffs in adoption of alternative national growth policies;

(14) the establishment of multi-state regional offices of the Office in order to obtain regional and State implementation and input regarding national goals and policies affecting the allocation of resources, the development of human resources, and environmental protection;

(15) the establishment, for purpose of coordinated planning and development, of representative multi-State regional bodies, and encouragement of the formation of representative multi-jurisdictions within States;

(16) the establishment, within the goals of balanced economic growth, of cooperative mechanisms, including appropriate taxation policies, grants, and other incentives, to achieve maximum participation of private industry in achieving the purpose of this act;

(17) the establishment of national growth policies, approved by the President, which would require the Office to participate in the review of agency and departmental budgets after they are submitted to the President or the Office of Management and Budget, but before they are submitted to Congress;

(18) the establishment of a national coordinated multijurisdictional comprehensive planning process, including but not limited to the following activities:

(A) supervising and coordinating the activities of the Federal co-chairmen of the multi-State regional planning and development commissions provided for in the Act;

(B) facilitating the use of common information and data bases for regional, State, and local comprehensive and functional planning, and for this purpose the Office shall collect, analyze, and disseminate through the multi-State regional planning and development commissions information, data, and projections concerning economic trends and location patterns;

population characteristics, migration; direction and extent of urban and rural growth and change; employment and unemployment; social, education, housing, health, recreational, cultural and welfare needs, governmental organization patterns and financial resources available within the States and political subdivisions thereof; and any other subjects deemed essential to the planning process;

(C) providing channels for and facilitating the continuing exchange and consideration of planning information among all Federal, multi-state, State, and local planning agencies relevant to the planning process for the purpose of periodic joint determination of mutually consistent, realistic, and attainable regional, State, and local growth policies;

(D) monitoring the growth and development or stabilization of the regions, States, and localities, comparing planned with actual development or stabilization, and making adjustments in growth policies or in developmental activities, as may be indicated by such reviews, in order that the growth policies continue to serve as current and suitable guides for Federal, State, and local program decisions;

(E) reviewing proposals for federally aided programs and projects for consistency with the stated growth policies, in accordance with the provisions of section 204 of the Demonstration Cities and Metropolitan Development Act of 1966, section 401(a) of the Intergovernmental Cooperation Act of 1968, the Rural Development Act of 1972, and this [proposed] act;

(F) reviewing the planning requirements of all existing and proposed Federal programs, and taking such steps as are necessary to insure that these planning requirements are compatible with the unified comprehensive planning system; and

(G) periodically summarizing, for the use of both the President and the Congress, the current and foreseeable needs for various types of Federal assistance as indicated by the comprehensive planning system, taking into consideration, among other things, the relative priorities assigned to such assistance among the several regions, States, and districts in their respective plans; and

(18) an evaluation of the yearly funding of the Office, and the Foundation [for the American Future].

The bill goes on to specify the contents of the proposed annual Report on Balanced National Growth and Development, and it would transfer to the Office of Balanced National Growth and Development all functions of the Domestic Council related to national growth and development policy.

The Council on Balanced National Growth and Development, which would advise the Office on Balanced National Growth and Development would be composed of the Attorney General; the Secretaries of Housing and Urban Development, Agriculture, Health, Education and Welfare, Interior, Commerce, Defense, Labor, Transportation, and the Treasury; the chairmen of the Federal Reserve Board, the National Citizens Council on the American Future, the Domestic Council, the Council of Economic Advisers, the Advisory Commission on Intergovernmental Relations, the Environmental Quality Commission, the Interstate Commerce Commission, and the Civil Aeronautics Board; and the directors of the Foundation of the American Future, the Office of Economic Opportunity, the Office of Management and Budget; as well as the administrators of the Federal Energy Agency, the General Services Administration, and the Environmental Protection Agency.

The Office of Balanced National Growth and Development would be required to encourage the formation of multi-State and State citizens councils that would advise the Multi-State Regional Development and Planning Commissions. Multi-State citizens councils would be established by a majority vote of the regional commissions they would assist. The State citizens councils would be established through the initiative of the Governors with the concurrence of their legislatures. Up to 90 percent of the operating costs of these councils would be supplied by the Office of Balanced National Growth and Development.

The Foundation for the American Future would be responsible to a Board of Trustees consisting of 19 members—nine appointed by the President with the advice and consent of the Senate, two appointed by the President

Pro Tempore of the Senate, two appointed by the Speaker of the House, and the following "regular" members: the directors of the Office of Balanced National Growth and Development, the Congressional Office of Policy and Planning, the National Science Foundation, and the Office of Technology Assessment; and the chairmen of the National Citizens Council and the Advisory Commission on Intergovernmental Relations.

The National Citizens Council on the American Future would be established to assist and advise the Foundation on the American Future. It would have 15 members—five appointed by the President Pro Tempore of the Senate, five by the Speaker of the House, and five by the President.

The proposed Agency for Population and Demographic Analysis would be located in the Census Bureau. It would have three organizational parts — the existing Office of Demographic Fields, the existing Office for Research and Methodology, and a new Office for Demographic, Economic, Social, Political, and Fiscal Analysis. The Secretary of Commerce would appoint a Director to administer this agency. Among its functions would be the analysis of population levels and distribution trends, and the analysis of the impact of existing and proposed population control incentives.

S. 3050 would provide for "wall-to-wall" multi-State regional commissions which would be comprised of from eight to twelve multi-state regions. Each commission would consist of the Governor of each State in the region, a State legislator from each State in the region, a Federal co-chairman, and an executive director. The regional boundaries of each region would be determined by the President after consultation with the Governors of the affected States, subject only to approval or disapproval

via concurrent resolution in Congress before the effective date. Some of the functions of the multi-State commissions would be to establish systems of policy formulation and planning in coordination with Federal and State governments, coordination of State comprehensive development plans and interstate planning.

In Congress the Joint Committee on Balanced National Growth and Development would be comprised of the chairmen, or the chairmen's designees, from the following Committees: The Senate Committees on Aeronautical and Space Sciences, Agriculture and Forestry, Appropriations, Armed Services, Banking, Housing, and Urban Affairs, Commerce, Finance, Government Operations, Interior, Labor and Public Welfare, Public Works, and Veterans Affairs; and the House Committees on Agriculture, Appropriations, Armed Services, Banking, Currency and Housing, Education and Labor, Government Operations, Interior, Interstate and Foreign Commerce, Public Works, Science and Technology, Veterans Affairs, and Ways and Means; and the Joint Committee on Atomic Energy and the Joint Economic Committee.

The function of the Joint Committee on Balanced National Growth and Development would be to direct the Congressional Office of Planning and Policy, which would have a director appointed jointly by the Speaker of the House and the President Pro Tempore of the Senate. The functions of the Office would be to supply the Congress with needed information and analysis, to review the activities of other agencies in the planning process, and to submit an annual report to Congress on Balanced National Goals, Priorities, and Growth Policy.

Organizational Interactions

The complex system for interaction among the many organizational elements within the framework proposed by S. 3050 is best set forth in graphic form. The diagram presented on the following page identifies each of the basic linkages among the organizational elements. It is taken from a Joint Economic Committee Print entitled "A Proposal for Achieving Balanced National Growth and Development," the format in which the proposal first appeared.

Funding

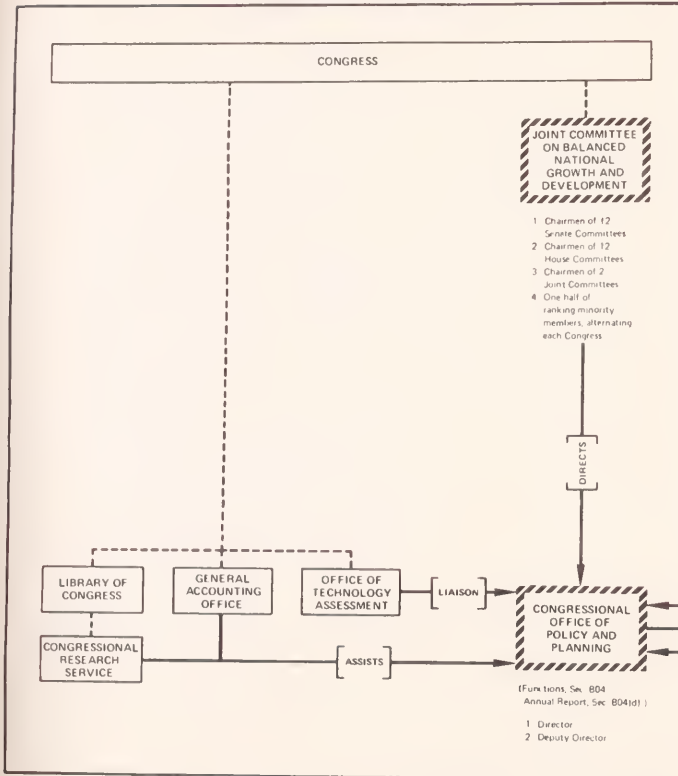
The bill authorizes to be appropriated such amounts as may be necessary to carry out the provisions of the Act, although there are some titles of the bill that include specific authorizations. The multi-State regional planning commission title provides for \$10,000,000 during the first year, and twice that for each subsequent year. A planning assistance program authorized by title V would receive a specific authorization for appropriations as well.

Pros and Cons

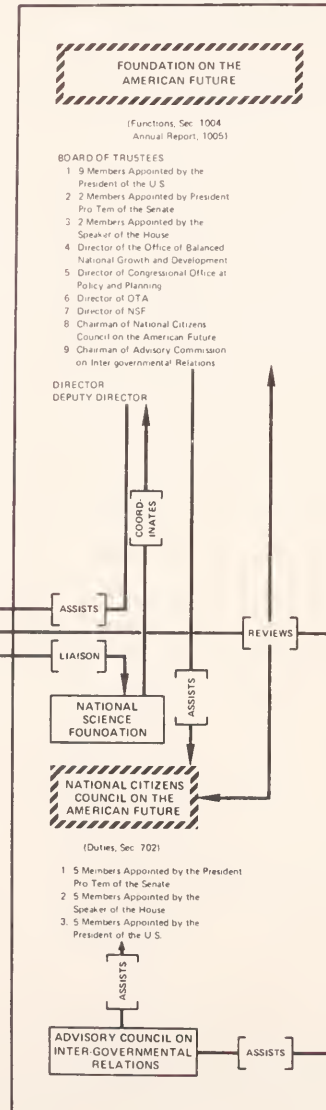
The strength of this proposal, it could be argued, lies in its laying out a comprehensive solution to the problem of establishing a national policy planning capability. In this regard it is similar to the Tugwell proposal for a new constitution. The Humphrey proposal, however, would operate within the framework of the existing constitution. By proposing a comprehensive solution with its many new agencies and linkages

COMPONENTS AND IMPORTANT RELATIONSHIPS OF EXISTING AND PROPOSED ORGANIZATIONS UNDER THE BALANCED NATIONAL GROWTH AND DEVELOPMENT ACT OF 1973

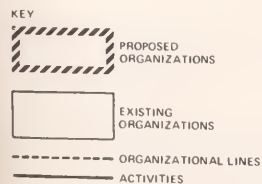
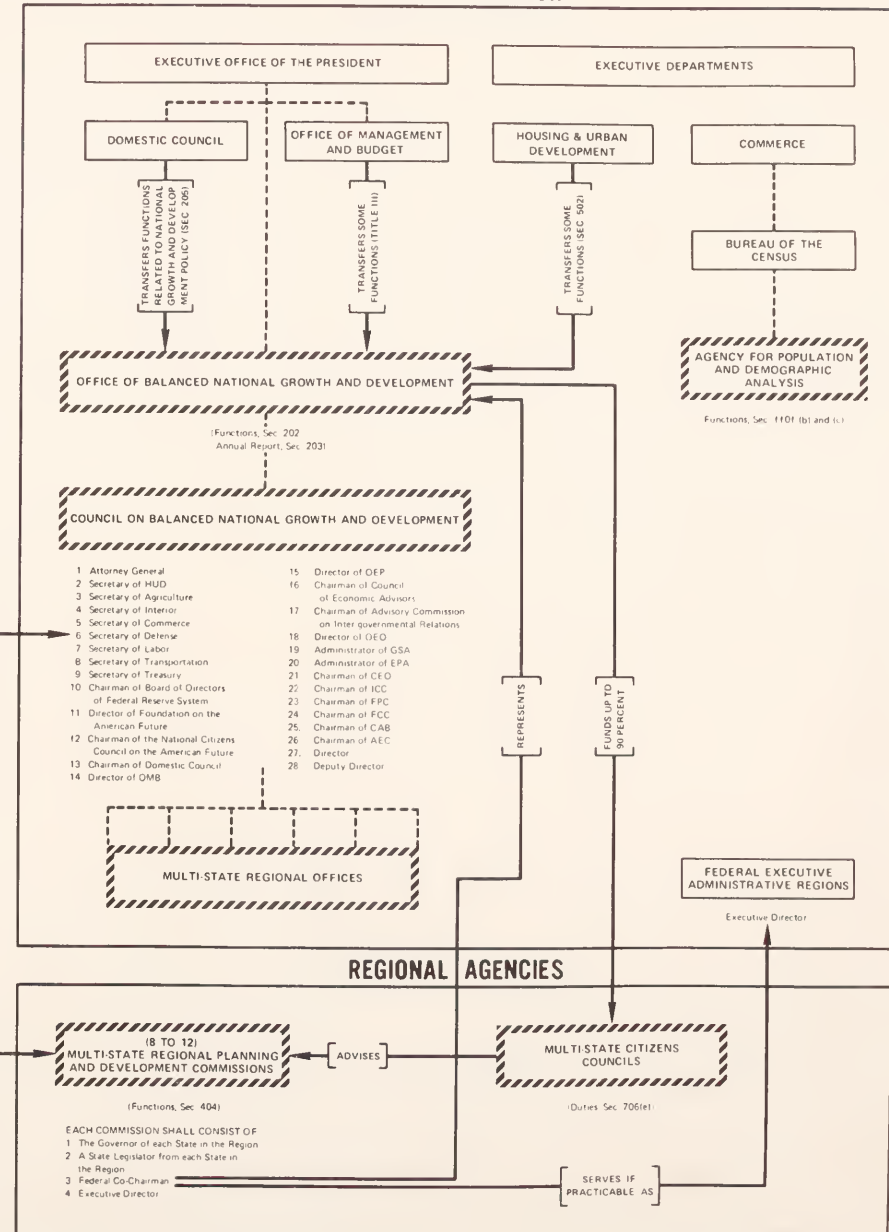
LEGISLATIVE BRANCH



INDEPENDENT AGENCIES



EXECUTIVE BRANCH



S. 3050 identifies many of the institutional, organizational, and procedural issues that must be faced in assessing alternate approaches to long-range planning in the Federal Government.

On the other hand, it could be argued that the proposal is entirely too complex, that the bureaucracy it would create would probably become so ponderous that its effective functioning would be hindered. It could also be argued that the plethora of field offices, regional commissions, and citizens councils could interfere with the policy dialogue between the Executive and Legislative Branches.

THE BALANCED GROWTH AND ECONOMIC PLANNING ACT OF 1975
S. 1795, 94th Congress

Background

The proposed "Balanced Growth and Economic Planning Act of 1975" was introduced during the 94th Congress by Senator Hubert H. Humphrey of Minnesota and Senator Jacob Javits of New York.

Scope of the Proposal

S. 1795 proposes to attack the problem of "erratic short-term economic policies" by creating a new institutional arrangement for collecting and analyzing economic information and for democratically planning the nation's economy.

Organizational Structure

S. 1795 would create an Economic Planning Board in the Executive Office of the President. Within the Board would be a Division of Economic Information and a Council on Economic Planning and, to advise and assist the Board, there would be established an Advisory Committee on Economic Planning.

The bill would also establish a Division of Balanced Growth and Economic Planning in the Congressional Budget Office and would involve the Joint Economic Committee in the review of the economic plans of the Executive Branch.

The Economic Planning Board, the centerpiece of the proposal, would have three members appointed by the President with the advice and consent of the Senate, one of whom is to be designated chairman.

The staffing of the Division of Economic Information is left to the discretion of the Board.

The Council on Economic Planning would consist of the chairman of the Economic Planning Board, who would be Council chairman; the Secretaries of State, the Treasury, Labor, Defense, Interior, Housing and Urban Development, Transportation, Agriculture, Commerce, and Health, Education and Welfare; the Attorney General; the chairmen of the Federal Reserve Board, the Council of Economic Advisors, and the Advisory Committee on Economic Planning; the Administrator of the Federal Energy Administration; and the Director of the Office of Management and Budget.

The Advisory Committee on Economic Planning would have four members appointed by the President, four members appointed by the Speaker of the House, and four members appointed by the President of the Senate. The Advisory Committee would select its own chairman from among its members. To guide the President, the Speaker of the House and the President of the Senate in making their appointments, the bill says —

The members of the Advisory Committee shall be appointed from among representatives of business, labor, and the public at large, who are competent by virtue of training or experience to furnish advice to the Board on the views and opinions of broad segments of the public in matters involved in the formulation and implementation of the Balanced Economic Growth Plan.

The proposal also authorizes the Advisory Committee to establish regional or industry subcommittees, requiring that at least one member of each such subcommittee be a member of the Advisory Committee.

The Joint Economic Committee would be the focus of Congressional review of the plans proposed by the Executive Branch.

The Division of Balanced Growth and Economic Planning in the Congressional Budget Office would be headed by a Deputy Director, who would report to the Director of CBO. The Division would be responsible for assisting the Joint Economic Committee in the performance of its duties in the planning and review process by providing —

- (1) information with respect to long-term economic trends, national goals, resource availability, and the economic policies necessary to achieve balanced, long-term economic growth;
- (2) information necessary for the preparation of the [JEC's] report and concurrent resolution . . . ; and
- (3) such related information as the [JEC] may request.

Organizational Relationships and the Planning Process

The Economic Planning Board , in carrying out its duties in the planning process, would —

- (1) prepare and submit [biennially] to the Council on Economic Planning a proposed Balanced Economic Growth Plan . . . for approval by the Council;
- (2) seek the active participation by regional, State, and local agencies and instrumentalities and the private sector through public hearings and other appropriate means to ensure that the views and proposals of all segments of the economy are taken into account in the formulation of the Plan;
- (3) evaluate and measure the achievement of the goals and objectives contained in any approved Balanced Economic Growth Plan and report thereon, . . . ;
- (4) review major programs and activities of the Federal Government to determine the extent to which such programs or activities are consistent with any approved plan;
- (5) coordinate the long-range planning activities of the departments and agencies of the Federal Government to

assure maximum consistency of such activities with the goals and objectives stated in an approved plan; and

(6) carry out such other functions pertaining to long-term economic planning as the President may direct.

The Council would review the proposed Balanced Economic Growth Plan and make revisions as it might judge to be appropriate and, after approving the plan, transmit it to the President. The Council would also regularly review the progress in implementation of the approved plan.

The Advisory Committee would advise and assist the Board during the preparation and review of the biennial plan.

The plan itself, in the preparation of which the Board, the Council, and the Advisory Committee would be involved in consultation with regional, State, and local planning agencies, would be required to —

(1) establish economic objectives for a period to be determined by the Board, paying particular attention to the attainment of the goals of full employment, price stability, balanced economic growth, an equitable distribution, the efficient utilization of both private and public resources, balanced regional and urban development, stable international relations, and meeting essential national needs in transportation, energy, agriculture, raw materials, housing, education, public services, and research and development;

(2) identify the resources required for achieving the economic objectives of the Plan by forecasting the level of production and investment by major industrial, agricultural, and other sectors, the levels of State, local, and Federal Government economic activity, and relevant international economic activity, for the duration of the plan; and

(3) recommend legislative and administrative actions necessary or desirable to achieve the objectives of the Plan

The proposed plan would be submitted by the President to the Congress not later than April 1, 1977, and every two years thereafter. At the same time the President would submit a report prepared by the Board and approved by the Council that would --

- (1) provide whatever data and analysis are necessary to support the objectives, resource needs, and policy recommendations contained in the plan;
- (2) provide an examination of the longer-term economic trends beyond the period of the Plan and recommend objectives with respect to the [purposes and intent of the proposed Act]; and
- (3) compare the actual results with . . . projected results of the Plan when submitted, and indicate (A) the reason for any failure to achieve the objectives of that Plan, and (B) the steps being taken to achieve the objectives of the previous plan, and (C) any necessary revisions in the Plan.

A second report, prepared by the Division of Economic Information and approved by the Economic Planning Board, would also be submitted to Congress. It would contain --

- (1) a review, carried out in conjunction with other departments and agencies of the Federal Government, of the activities, methods, and purposes of the information and statistical gathering, collation, analysis, and presentation functions of the Federal Government;
- (2) an analysis of existing information and statistical systems, and the economic data required [under this proposed Act];
- (3) recommendations for the improvement or modification in the standards, methods, and systems of statistics and information gathering; and
- (4) recommendations for such additional authority as may be necessary to obtain data not available

The proposed plan would be submitted to Congress and distributed to Governors and to appropriate State and local officials.

In Congress the proposed plan would be referred to the Joint Economic Committee. Within 60 days after the proposed plan is received, each standing committee of the Senate and of the House of Representatives and each joint committee of Congress would be required to submit to the JEC its comments and recommendations on those portions of the plan related to their respective jurisdictions. The reports from the Budget committees would be required to contain recommendations on budget policy for the duration of the proposed plan.

The JEC would be required to hold hearings on the proposed plan to receive testimony from Members of Congress, appropriate representatives of Federal agencies, the general public and interested groups. During this review process the JEC would also be required to consider the comments on the proposed plan submitted by State and local officials.

Within 105 days after receipt of the proposed plan, the JEC would be required to report to the House and to the Senate a concurrent resolution approving or disapproving, in whole or in part, the proposed plan. The concurrent resolution may contain alternatives, modifications of, or additions to the proposed plan. The report that would accompany the concurrent resolution would discuss findings and recommendations regarding the content of the proposed plan. Congress would be allowed 15 days to act on the concurrent resolution to approve or disapprove.

If the Congress changes or disapproves the plan or any of its parts, the President would make revisions and resubmit the plan within 30 days after receiving the concurrent resolution; and Congress would have an

additional 30 days to approve or disapprove the revised plan in whole or in part.

The Council of Economic Advisers would be involved in this planning process by making analyses of the relationships between the Economic Report and the Plan. The analysis would be included in the Economic Report which is transmitted to Congress.

Implementation

The President or the Board would not be permitted to implement the plan or any of its parts that were not approved or that were disapproved.

To implement the approved plan, the President, assisted by the Board, would be required to insure that Executive agencies carry out their activities in furtherance of the plan and would be required to encourage State and local governments and the private sector to act so as to further the objectives of the plan. In this regard it is similar in approach to "indicative planning" used in some countries.

As part of the implementation process, the Board may require that an Executive agency which has submitted any budget request, proposed rules, regulations, or legislation, or undertaken any activity that would have a "significant effect" on achieving the objectives of the plan, submit a detailed statement assessing the consistency of the proposal with the plan, together with a rationale for significant departures from the plan's goals or objectives.

Funding

The bill authorizes appropriations as may be necessary to carry out its provisions.

Pros and Cons

The basic argument in support of this proposal is based on the need, perceived by some, to improve economic information available to government and to the public, to look ahead, and to anticipate future events that will affect the nation's economic well-being. Supporters of the bill also assert that it is open and democratic, that it would not permit technocratic, elitist planning, and that it would be open to involvement and cooperation of State and local elected officials.

On the other hand, those opposed to the proposal criticize it as an additional, unnecessary interference by government in the market system. These opponents assert that such interference prevents efficient allocation of resources and will lead to scarcities and irrationalities in the distribution of goods and services.

An entirely different set of critics—those who support the planning idea—assert that the proposal does not go far enough. It does not require the participation of the private sector in plan preparation or in conformance to its goals and objectives. The Federal Government would simply be required to encourage private sector cooperation.

Still others fear that placing the planning agency within the Executive Office of the President, rather than in an independent status, will make it overly vulnerable to short-term political pressures and that the potentially adversarial relationship that could develop between the President and the Congress over the plan could destroy the utility of the plan and the planning process.

Some supporters of the planning idea and of the principles expressed in the Humphrey-Javits proposal suggest that the time allowed for the review and revision process may not be sufficient to allow for full consideration.

THE PROPOSED BALANCED ECONOMIC GROWTH ACT
H.R. 10373, 94th Congress

Background

This bill was introduced by Rep. Richard Bolling of Missouri on October 28, 1975.

Scope of the Proposal

H.R. 10373 would provide for (1) the developing of a biennially updated, long-range economic growth plan, (2) participation by State and local governments, regional organizations, agriculture, business, labor, consumers, and other interested groups and organizations in the development and review of such a long-range plan, (3) congressional review and possible disapproval of proposed balanced economic growth plans, and (4) the establishment of procedures such that Federal agencies will contribute to on-going assessment and implementation of the plan.

Organizational Arrangements

This proposal would place the responsibility for long-range economic planning and review largely on existing organizational entities in both the Executive and Legislative Branches of the Federal Government — on the President and the Council of Economic Advisers for preparation of the plan, and on the Joint Economic Committee (JEC), all standing committees of the House and the Senate, and all joint committees of Congress for review.

New organizations proposed are a Division of Economic Information in the Council of Economic Advisers, and a Division of Balanced Growth and Economic Planning in the Congressional Budget Office.

Organizational Relationships and the Planning Process

H.R. 10373 would require the President to transmit to the Congress a "proposed long-term balanced economic growth plan" that would be prepared by the Council of Economic Advisers. The bill would require that the proposed plan —

- (1) establish economic objectives, paying paramount attention to the attainment of the goal of full employment and giving particular consideration to the attainment of such goals as balanced economic growth, equitable distribution of income, price stability, efficient utilization of private and public resources, and balanced regional and urban development;
- (2) identify the resources required for achieving the economic objectives so established by forecasting the level of production and investment by major industrial, agricultural, and other sectors of the economy, State, local and Federal Government economic activity, and international economic activity, for the duration of the plan; and
- (3) recommend legislative and administrative actions necessary or desirable to achieve the objectives of the plan, including recommendations with respect to . . . policies and programs of economic significance.

The President would also be required to submit with the proposed plan a report prepared by CEA that would —

- (1) provide whatever data and analysis are necessary to support the objectives, needed resources, and policy recommendations contained in the plan;
- (2) provide an examination of longer-term economic trends beyond the period of the plan and recommend long-term objectives with respect to the goals outlined . . . [in the plan]; and
- (3) compare the actual results with projected results presented in the previous plan, . . . and indicate (A) the reason for any failure to achieve the objectives of that plan, (B) the steps being taken to achieve the objectives of that plan and (C) any necessary revisions in that plan.

The Division of Economic Information in the Council of Economic Advisers would be the organizational element in CEA for seeking information, data, estimates and statistics related to the plan preparation process. It would be authorized to obtain such information directly from Executive agencies.

The Bolling proposal would require the Council of Economic Advisers to establish procedures for obtaining the views and opinions of a variety of governments, organizations and interested groups in the preparation of the plan, so as to involve the federal intergovernmental structure and the private sector in the preparation of the plan.

Title I of the bill deals with rules and procedures for review of the proposed balanced economic plans by Congress. It would require that the proposed plans be referred to the Joint Economic Committee and that within 60 days after Congress receives the proposed plan, each standing committee of the two houses and each joint committee submit to the JEC a report containing their view and recommendations on all matters of the proposed plan that relate to their respective jurisdictions.

The JEC may, at its discretion, hold hearings to receive testimony from Members of Congress, appropriate representatives of the Federal agencies, the general public and interested groups. It would be required, however, to establish procedures for obtaining the views and opinions of State and local governments and regional organizations, and of agriculture, business, labor, consumers, and other interested groups and organizations and to consider their comments and views during review of the proposed plan.

During the 90 day period after transmission of the proposed plan, the President would be allowed to submit revisions in the proposal either at his own initiative or after consultation with the JEC.

After 135 days after transmission by the President or at a later time specified in the plan, the plan would take effect unless disapproved by Congress. Section 103 provides for the disapproval process by way of a concurrent resolution disapproving the plan reported by the JEC and for discharge of the JEC from further consideration if after 105 days it has failed to report such a concurrent resolution and if there is a Member of either house favoring such a concurrent resolution to disapprove the plan. Section 103 establishes procedures to handle the concurrent resolution in this latter case.

Implementation is a critical part of the full planning process, and the Bolling proposal would require the President with the assistance of CEA to take appropriate action to ensure that the Executive agencies carry out their programs and activities so as to further the objectives of any approved balanced economic growth plan, and to encourage State and local governments and the private sector to act in such a way as to further the objectives of the plan as well.

The CEA would be empowered to require that any agency submitting budget requests, proposed rules, or legislation not in furtherance of the plan justify its actions for departure from the plan.

The proposed act would prohibit the Executive Branch from taking any action to implement the plan if it has been disapproved or if the 135 day period has not expired. A plan that is not disapproved within the applicable time period would be considered approved.

The proposed Division of Balanced Growth and Economic Planning in the Congressional Budget Office would perform long-term economic analysis and would assist the JEC in the discharge of its plan review responsibilities. The Division would be required to provide —

- (1) information with respect to long-term economic trends, national goals, resource availability, and the economic policies necessary to achieve balanced long-term economic growth;
- (2) information necessary for the preparation of the concurrent resolution and report to accompany the resolution; and
- (3) other related information requested by JEC.

Funding

The bill would authorize to be appropriated such sums as may be necessary to carry out its provisions.

Pros and Cons

The advantage of this proposal is that from the point of view of organizational arrangements it relies upon existing entities. No entirely new organizational institution would be established; only incremental enlargements of existing bodies—CEA and CBO—are proposed.

The major disadvantage of this approach, however, is that it places the long-range planning function within the Executive Office of the President, which has historically been more involved with short-term matters rather than long-term matters. There may be pressures to transform a new long-range economic planning function in CEA into something that would conform nominally to the proposed law, but that would in fact be a continuation of the relatively short-term view of CEA and other parts of the Executive Office of the President.

A SUMMARY OF SOME OF THE FUNDAMENTAL ISSUES

This review has sketched the organizational structure of several alternate proposals for establishing long-range planning and strategic assessment within the Federal Government. In assessing these and other proposals—this review does not contain a comprehensive set of such proposals—there are several issues that appear again and again and should be emphasized.

First, the need to link planning and action has led most of those who have drafted proposals to place the long-range planning function in the Executive Office of the President. The case for doing this is strong; but the historical picture suggests that there is a real danger in so doing, namely the danger of succumbing to short-term political pressures.

Second, it is often argued that a long-range planning function must be tied to a regularly appearing document—a report, a message, something tangible. Even though long-range planning is a process for aiding decision-making, having a regularly appearing document focusses the effort, and it forms a basis for dialogue between Congress and the Executive Branch. In current practice, the annual budget and the Economic Report are examples of tangible documents that catalyze the work effort. A wag has said that these documents serve as lamp posts for a drunk man to hang on. Although this was a facetious remark, it contains an element of insight that may be worth considering.

Third, specifying the scope of the work to be performed and the content of the planning documents that would form the basis of discussion appears to be a critical element, one that has been given detailed attention in

of the proposals reviewed in this report. Such detailed specification clarifies Congressional expectations and can be a tool for helping to prevent disappointing performance by the Executive Branch. For example, James Sundquist, testifying before the House Committee on Banking, Currency and Housing, Subcommittee on Housing and Community Development, during oversight hearings on the President's 1974 Report on National Growth and Development, said that much of the disappointment that was widely felt with regard to the growth reports was directly traceable to ambiguities in the statutory mandate calling for the biennial growth report.

Fourth, if the decision is made to place a long-range planning function in the Executive Office of the President, there would be some question as to what part of the EOP would be the most appropriate location. The Domestic Council is a possibility, but some observers point to the suppression of long-term issues to allow attention to be given almost entirely to short-term policy considerations in the Domestic Council. The Woodrow Wilson Center study group gave this question extensive consideration. Their statement of pros and cons on the question is paraphrased below:

INDEPENDENT AGENCY IN THE EOP

Locating the planning and assessment function as an independent agency in the EOP would make it responsible to the President and thereby give it more status and visibility. It would also separate the identification and evaluation of policy options from resource allocation decisions, thus allowing it potentially wider scope and greater objectivity. It would allow for a "council-type" organization and it would provide an appropriate forum for publication of study results.

On the other hand, an independent group in the EOP could develop an ivory tower atmosphere with reduced access to resource and legislative decision-making. It might also duplicate analytic skills already available in OMB. Finally, creating another entity in the EOP would further confuse its structure and could interfere with how the President chooses to organize the staff of his own executive office.

AS PART OF THE OFFICE OF MANAGEMENT AND BUDGET

Placing a long-range planning and strategic assessment function in the Office of Management and Budget facilitates the linkage between long-range policy and the budget process, thereby making OMB potentially more sensitive to the long-range implications of annual budget decisions. Such an organizational arrangement would allow close contact between budget examiners and long-range planners to assess the long-range implications of program proposals. It would also allow similar participation in the legislative clearance process more easily than would separating the long-range planning and assessment function from OMB. OMB would provide a base from which to assign study tasks to other Executive agencies.

On the other hand, it places the head of the long-range planning and assessment staff at least once removed from the President, and buried in the OMB organization it would potentially lose visibility to the public and to Congress as well as becoming more vulnerable to bureaucratization. ^{23/}

Fourth, only two proposals in the set examined here suggest establishing a long-range planning and policy assessment function as an independent institution. Tugwell proposes a separate branch of government; the Institute for Congress proposes a kind of consulting firm (which would not be entirely independent since it would be captive of the Congress). The Federal Reserve Board is sometimes suggested as a model for a long-range planning institution, but this model does not appear in any current legislation receiving consideration at this time. The need to link planning and action would appear to be such a dominant point of view that most proposals are aimed at working out ways to minimize some of the potential problems that are inherent in establishing a comprehensive, long-range planning function in the current structure of the American national government.

^{23/} Cooper, Chester L. Institutions for Strategic Policy Assessments. A Proposal. Woodrow Wilson International Center for Scholars. Smithsonian Institution. Washington, D. C. July 24, 1973. p. 6

Fourth, this study has been limited to reviewing some of the principal proposals to establish a planning capability in the Federal Government; it has not considered the question of whether long-range planning is needed. Its approach has been, assuming a need for improved long-range planning and strategic assessment in the Federal Government, what are some of the alternate ways of organizing such an activity or process? The question of whether, and how much, planning is desirable and feasible in the present system of government and political ideology in the United States is not treated.

L O N G - R A N G E P L A N N I N G
I N T H E
P R I V A T E S E C T O R

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PLANNING IN THE PRIVATE SECTOR

The real planners are the managers who make the final decisions, and what we call planning is the support service intended to help make those decisions better.

- Donald Conover
Western Electric, Inc.

INTRODUCTION

In the United States, long-term planning and strategic assessment have become more of an established part of management in large, complex, private corporations than in government. It is based upon the corporate planning literature and upon statements provided upon congressional request by selected U.S. corporations. These statements are compiled in Appendix I. The aim of this report is to identify some of the principal organizational elements of corporate planning and to assess their applicability to long-term planning in the Federal Government.

Since the 1930's the planning idea has repeatedly appeared in the highest levels of the Federal Government, but there seems to be relatively little systematic, long-term planning to be found in either the Executive or Congressional Branch.^{1/} Although there are some exceptions, such as weapons systems planning and water resource project planning, the lack of long-term planning can be seen in most dimensions of Federal domestic activity. Upon assuming office, some Presidents have become aware of short-sighted, overlapping and sometimes conflicting Federal policies and programs which the lack

^{1/} A review of planning in selected Executive agencies has been prepared by the General Accounting Office. The final GAO report is tentatively scheduled for completion in August 1976.

of planning and policy coordination sometimes generates. Roosevelt tried the National Emergency Council, the National Recovery Administration and the National Resources Planning Board. None of these has survived. Eisenhower was concerned about the lack of planning and coordination in foreign affairs and established the National Security Council, which exists today. He did not, however, establish anything comparable for the planning and coordination of domestic policy. Johnson required the adoption of planning-programming-budgeting systems in domestic agencies after McNamara demonstrated the approach in the Defense Department, but Johnson's effort survives only in a much abridged form and under a different name, if it can be said to survive at all. Nixon sought to reorganize the Executive Branch along functional lines in order to achieve a policy planning and coordinating capability in the Executive Office of the President. This was disapproved by Congress, and the President was left with the Domestic Council, which was similar in structure to Roosevelt's National Emergency Council and which, like NEC, was eventually caught up in day-to-day business to such an extent that it was unable to address itself to long-term policy planning.

The private sector provides a striking contrast. Corporate planning has become a generally accepted and instituted aspect of business since it appeared as a conscious and more or less formalized activity in the middle and late 1950's. Over the subsequent two decades, corporate planning has grown significantly and has developed an extensive, specialized literature within the management field. This is not to say that corporate planning has not had its failures, its false starts, its disappointments.^{2/}

^{2/} Taylor, Bernard. Corporate Planning -- The Future Prospect. Corporate Planner's Yearbook 1974-75 (O. Hussey, editor) p. 6.

What is important is that long-range planning and strategic assessment have become sufficiently useful activities in many large, complex, profit-oriented companies that they have been institutionalized as part of on-going management processes and have survived. Bernard Taylor points out that "corporate planning is rapidly becoming accepted in industrial countries throughout the world as fundamental to good management in large, progressive organizations."^{3/}

In the 1970's both the Federal Government and private business are faced with new challenges of rapidly changing economic, social, technological, and international environments. In the private sector these challenges are requiring new responses and strategies on the part of corporate planning and corporate planners. A special report in Business Week said, "For corporate planners and the top executives who rely on their advice, the world has never looked as hostile or as bewildering as it does today. The very uncertainties from the clouded economic outlook to the energy crisis, that make sophisticated forward planning more vital than ever before, also make accurate planning that much more difficult." The report went on to say, "...the role of planning will continue to grow because the outlook is so hazy--not just for business but for all society."^{4/} It could be argued that the statement applies not only to business but to the Federal Government as well.

This report explores aspects of the corporate planning experience in order to contribute to an assessment of what the Federal Government might learn from the private sector as Congress considers the appropriate role of planning in Federal activities. The discussion presented here examines the relationship

^{3/} Ibid., p. 4.

^{4/} Corporate Planning. Piercing Future Fog in the Executive Suite. Business Week. April 28, 1975. p. 46.

between planning and action, the varieties of planning conducted in the private sector, and some of the ways the private sector has organized for the conduct of planning. It analyzes corporate responses to a set of questions formulated by the Subcommittee on Fisheries and Wildlife Conservation and the Environment of the House Committee on Merchant Marine and Fisheries, and the Subcommittee on Environment and the Atmosphere of the House Committee on Science and Technology; it summarizes responding corporation's recommendations regarding planning in the Federal Government; and it discusses the implications of corporate planning approaches for planning in the Federal Government.

PLANNING AND ACTION

There are many definitions and concepts of planning to fit many different situations, but the definitions and concepts have a common core that constitutes a general definition of the word. By most definitions rational planning consists of setting objectives, assessing and forecasting the environment for future action, designing alternative courses of action to achieve the objectives, evaluating each alternative in terms of its present and future costs and benefits, selecting the course of action with the greatest net benefit, and monitoring the actual results as the action is carried out. Planning and action are intimately linked in this fundamental definition; planning without action is not a useful activity.

The connection between planning and action carries over into definitions of planning found in a variety of works on corporate planning. Some examples are the following:

- Ackoff:5/ "Planning is the design of a desired future and of effective ways of bringing it about."
- Cotton:6/ Planning is a "prescriptive process intended to guide discretionary decisionmaking in deployment and management of resources." Company-wide planning requires "specification of future activity with sufficient lead time and precision to be technologically feasible, administratively possible, and objectively beneficial, and continuous development, monitoring and adjustment of objectives, plans and implementations which facilitate achievement on a sustained basis."
- Denning:7/ Corporate planning is "a formal, systematic, managerial process, organized by responsibility, time and information, to ensure that operational planning, project planning are carried out regularly to enable top management to direct and control the future of the enterprise."
- Irving:8/ Corporate planning is "1. the formal process of developing objectives for the corporation and its component parts, evolving alternative strategies to achieve those objectives, and doing this against a background of external environmental changes; 2. the process of translating strategy into detailed operational plans and seeing that these plans are carried out."

Because of the widespread acceptance of the linkages between planning and action, planning in the corporate community is usually seen as an integral part of corporate management both at the top and within individual divisions or profit centers of the firm. In a broad sense, planning is "a complete way of running the business: a formalized approach which should involve managers

5/ Ackoff, R.C. A Concept of Corporate Planning. New York, Wiley Interscience, 1970. p.

6/ Cotton, Donald B. Company-Wide Planning. Concept and Process. New York: Macmillan, 1970. p. 11.

7/ Denning, B.W. Corporate Planning; Selected Concepts. New York, McGraw-Hill, 1971. p.

8/ Irving, P. Corporate Planning in Practice: a study of the development of organized planning in major United Kingdom companies. Unpublished M. Sc. dissertation, University of Bradford, 1970. Cited in Hussey, David E. Corporate Planning Theory and Practice. Oxford, Pergamon Press, Ltd., 1974. p. 4.

at all levels of the company."^{9/} The implication of the linkage between planning and action is that "...the real planners in any company are its managers, the real planning department is the entire company."^{10/} Writers on the subject of corporate management and corporate planning reflect this point of view. Fayol, writing in 1949, identified the basic activities of management as planning, organizing, commanding, coordinating, and controlling.^{11/} Urwick drew up a similar list (forecasting, planning, organizing, directing, coordinating, controlling and communicating)^{12/} as did Brech (planning, motivating and coordinating, and controlling)^{13/} and Drucker (setting objectives, organizing, motivating, communicating, measuring performance, and developing people)^{14/}. Hussey^{15/} recast Drucker's management categories in planning terms as follows:

"Corporate planning includes the setting of objectives, organizing the work, people and system to enable those objectives to be attained, motivating through the planning process and through the plans, measuring performance and so controlling progress of the plan, and developing people through better decisionmaking, clearer objectives, more involvement and awareness of progress."

^{9/} Hussey, David E. The Role of the Corporate Planner. The Corporate Planner's Yearbook. 1974/75. Oxford, Pergamon Press Inc., 1974. p. 82.

^{10/} *Ibid.*, p. 84.

^{11/} Fayol, Henri. General and Industrial Management. London, Pitman, 1949.

^{12/} Urwick, L.F. The Pattern of Management. Minneapolis, University of Minnesota Press, 1956.

^{13/} Brech, E.L.F. Organization. London, Longmans, 1966.

^{14/} Drucker, Peter F. The Practice of Management. London, Heinemann, 1955.

^{15/} Hussey, David E. Corporate Planning Theory and Practice. Oxford, Pergamon Press, 1974.

Corporate planners assembled for the Congressional Seminar on Corporate Planning stressed the linkage between planning and doing in a way that is similar to the thrust of the definitions given above. They repeatedly emphasized that the planners should be the doers; and the doers, the planners. The point was made in their written submissions to the Subcommittees and in their discussion during the seminar. One participant, for example, said that to put this precept into practice a key part of his firm's planning policy was "full involvement in the planning process by top decision-makers, both at the corporate and operating levels."^{16/} His comment was supported unreservedly by the other participants in the seminar. The emphasis placed on this point by seminar participants and by the literature on corporate planning and management leaves little doubt that planning without the active and willing involvement of a firm's decision-making managers is a useless activity not worth the time, trouble, or money.^{17/}

TYPES OF CORPORATE PLANNING

The definitions of planning set forth in the previous section do not reflect the various forms of planning that take place in the private sector. The form or forms of planning that a corporation uses will depend on a variety of factors, including the management's perception of the role of planning in the overall management process, the organization of the corporation, its view of corporate purposes, its perception of the environment in which it operates, and its attitude toward change. The forms of planning used by firms vary and

^{16/} Johnson, Vernon. Prepared statement responding to inquiry from the House Committee on Merchant Marine and Fisheries, Subcommittee on Fisheries and Wildlife Conservation, and from the House Committee on Science and Technology, Subcommittee on Environment and the Atmosphere.

the name used to identify forms of planning also vary. The literature and the jargon of corporate planners is sprinkled with terms such as normative planning, project planning, development planning, and conceptual planning. Writers and firms use these terms in different ways to describe the planning activities that are carried out in different corporations. The principal forms of planning are discussed below.

The broadest form of corporate planning is that which addresses the basic purposes and directions of the corporation, its mission, its desired ends, its overall objectives and goals. This form of planning is usually called "strategic planning," but it is sometimes referred to as "policy planning" (especially when it deals with the internal environment or framework for corporate operations), or "conceptual planning." It is usually long-term, i.e., with a time frame of five years or more; and it deals with such things as the amount of emphasis to give to new products and markets relative to existing products and markets, or the corporation's degree of investment in major geographic divisions and countries of the world.

The second form of corporate planning is operational planning which covers a relatively short period of time--one year is typical--and is focussed on action programs that are aimed at achieving particular goals during the time period. An operational plan is usually the plan for an established or functioning part of a company, such as one of its divisions or subsidiaries. According to a Conference Board study, operational planning tends to be more formal and

17/ The point is analogous to a point that is often made about research to matters of public policy. If the ultimate users of the research product are not involved in the development of the research questions and the general design of the research program, there is little probability that they will really use the research product when it is completed.

more detailed than strategic planning. An operating plan may include marketing plans, facilities plans, production plans, or plans for allocating the corporation's capital among major uses during the time period of the plan.

The term project planning is often used to designate plans for a specific particular operations, such as a capital investment project or the development of an individual undertaking.

Variations on these three forms of corporate planning can be seen in the literature and in statements of individual corporations. Alternate taxonomies based on these basic forms of planning are included for reference purposes in Appendix II.

ORGANIZATION FOR PLANNING

In reviewing corporate planning practices and structures with a view toward identifying what might be applicable in the public sector, especially in the Federal Government, the experience of the private sector in organizing for planning is of major interest.

In a highly centralized firm, where the chief executive does not delegate a great deal of discretion to the firm's operating managers, it is only the relationship between the planning function and the chief executive that is of interest. However, there are few large, complex corporations that have such a high degree of centralization. Of more direct interest is the large, complex and relatively decentralized corporation. Such a firm is in some ways similar to the Federal Government: it has a wide variety of activities; it is organized along some sort of functional, divisional, or profit center lines in ways that could be considered analogous to the organization of the Executive Branch of the Federal Government; each division has some degree of autonomy

within the general policies of top management; it has a top corporate management with a strong chief executive. Moreover, both the corporation and the Executive Branch as decentralized organizations face the problem of central guidance and control of their subdivisions. In the Federal Government one of the principal problems of management in the Executive Branch has historically been the President's difficulty in coordinating policy and controlling and directing a fragmented bureaucracy that is organized on the basis of service to constituencies more than on the basis of function.

The ways in which the planning process has been wedded with such a decentralized organizational structure in the corporate world is described at length in the corporate planning literature and by participants in the Congressional Seminar on Corporate Planning, which is summarized in Appendix IV. The nature of the planning function in management and the conception that corporate planners have of their job are keys to understanding the various organizational approaches that different corporations take.

Company-Wide Planning and the Planner's Job

Both the corporate planning literature and the corporate planning practitioners who participated in the Congressional Seminar on Corporate Planning repeatedly stressed the catalytic nature of the corporate planner's job. The planner's mission is typically described as not to plan but to "cause planning to happen in an orderly and systematic way, to ensure that attention is given to the right factors, to evaluate opportunities, and to coordinate all the planning activity of the entire company."^{18/} This point of view is based

^{18/} Hussey. The Role of the Corporate Planner. op. cit. p. 83.

upon the notion that planning is a style of operation, a disciplined and systematic approach to making business decisions and as such the responsibility of the executive management of the firm. The planner's role, in this view, is to stimulate the top executives, the managers, to adopt and carry out planning as their own approach.

The organizational implication of this point of view is that the corporate planning unit at the top of a corporation should be minimized in terms of staff. One writer says, "Whatever the temptation, a large planning department is something to be avoided."^{19/} He goes on to say, "As a general principle it may be said that the employment of every additional person in the planning department is a relative degree of failure, something to be undertaken only when it is so essential that no other answer is possible." These are the words of an advocate of corporate planning.

The corporate planning function is generally seen to consist of the following two parts: "First, to guide and assist the divisions in the formulation of their business plans; second, to develop an overall corporate business plan that will comprise both the sum of the division plans and the growth objectives of the corporation as a whole."^{20/} Another writer says, "At the strategic level, working as a member of the top management team, [the planner] helps to identify opportunities, analyze and evaluate alternatives, define objectives, and design strategies related to the future, taking account of changing factors in the business environment; at the operational level, he is a catalyst, a

^{19/} Ibid., p. 89.

^{20/} May, William F., speaking as chairman of the Board of Directors, American Can Company. Quoted in Henry, Harold W. Long-Range Planning Practices in 45 Industrial Companies. Englewood Cliffs, Prentice-Hall, 1967. p. 38.

coordinator, a planning systems designer and a trainer of line management in planning methodology. At both levels he must be concerned with monitoring and controlling. At neither level is he an 'ivory tower' theorist, but an active member of the management team."21/

Organizational Arrangements

Private firms use a variety of organizational arrangements and entities to carry out their planning processes. Those identified by respondents to a survey by the Conference Board 22/ include top management planning committees, corporate planning units, staff coordinators, and ad hoc task forces. Each of these is described below.

TOP MANAGEMENT PLANNING COMMITTEES. The top management planning committee, sometimes called the corporate planning committee or something similar, is an institutional device for maintaining the "interest, comprehension and participation" 23/ of the corporation's top managers in the corporate planning process. Its purpose is to give periodic attention to the planning portions of the management function. According to Conference Board respondents, the planning committee "undertakes such tasks as assessing current strategies and exploring new ones; formulating corporate objectives and goals; setting corporate priorities for the allocation of resources; reviewing plans; and monitoring performance against plans."24/ In Cotton's formulation of the

21/ Hussey, David E. The Role of the Corporate Planner. Op. cit. p. 83.

22/ Egerton, Henry C. and James K. Brown. Planning and the Chief Executives. New York, The Conference Board, 1972.

23/ Cotton, Donald B. Company-Wide Planning. Concept and Process. New York, Macmillan, 1970. p. 131.

24/ Egerton and Brown. Op. cit. p. 31.

duties of the planning committee, it "would recurrently endorse assumptions, suggest constraints, propose missions, and develop policies before their submission to the chief executive."^{25/} Such a planning committee would also provide advice on the "behavioral aspects of the organization, characteristics of the business, identification and interests of power blocs, best utilization of administrative systems, location of expertise within the organization, external contacts of relevance, [and] timing and content of requests."^{26/}

Cotton asserts that although the corporation's chief executive should be a member of the planning committee, the chief planner should chair the committee because it should have an advisory relationship to the chief executives through the chief planner. Among Conference Board respondents, however, those that use the planning committee approach typically reported that the chief executive chairs the committees, not a "chief planner."

CORPORATE PLANNING UNIT. According to the Conference Board study, most of the firms responding to their survey have as part of their organizations some form of corporate planning unit. Sometimes this planning unit consists of a single person, sometimes this single person has additional staff to support his efforts. The function or responsibilities of such a corporate planning unit depends largely upon the degree to which planning is a recognized, ongoing and institutionalized process in the management of the firm. A firm that is beginning to implement or make major changes in its planning process would have a corporate planning unit with responsibilities that differ from

^{25/} Cotton. *Op. cit.* p. 131.

^{26/} *Ibid.*, p. 132.

those of a planning unit in a firm where the planning process was well established. When starting up or when making major alternations in the planning process the planning unit's mandate is typically to undertake system design--to develop planning procedures and related administrative processes--and sometimes to propose corporate objectives and to draft plans for submittal to the firm's chief executive. When the corporate planning process is well established the role of the corporate planning unit is less one of planning leadership under the chief executive than one of service to the operating line divisions of the corporation. In the words of the Conference Board report on corporate planning and the chief executive, the corporate planning unit does not prepare plans; this is left to line management. The essence of (its) job is to conserve management time by absorbing some of the often massive underlying work that planning requires, to help those who plan to do so effectively and efficiently. This entails such tasks as:

--Proposing corporate objectives and goals and strategies and defining planning issues for top management's consideration.

--Helping line managers plan, educating them in planning techniques....

--Supplying essential information such as market forecasts and estimates of trends with respect to competitors, technology, the economy, legislation and government policy, and other environmental matters pertinent to the firm.

--Seeing to the proper functioning of planning procedures: scheduling meetings, designing plan formats, etc.

--Consolidating and editing plans and, less frequently, analyzing and criticizing them before they are submitted to the chief executive.

--Acting as a sounding board for the chief executive as he contemplates the company's direction or strategy."^{27/}

^{27/} Egerton and Brown. *Op. cit.*, p. 32. See also Cotton, *op. cit.*, p. 28, who summarizes the duties of the chief planner of a corporation--and by

The corporate planning unit is typically a staff unit reporting directly to the corporation's chief executive. This organizational arrangement, a text-book model, is derived from the axiom that planning and doing are inseparably linked. Indeed, it could be argued that any other arrangement should be carefully justified before deviating from this model. Examples of deviations from the model identified by the Conference Board study include arrangements in which the planning unit reports to an executive vice president or a functional vice president and amalgamation of the planning function with research and development. Each of the variations resulted from the special circumstances faced by the corporation that made the arrangements.^{28/}

Although the corporate planning unit with reporting linkages to the chief executive officer of the corporation is the model offered by most literature on corporate planning, this type of organizational arrangement does have some disadvantages. The first is that the corporate planning unit may over-institutionalize the corporate planning process in such a way that it allows line executives to shirk their planning responsibilities. Second, the corporate planning unit could become an obstacle to planning by corporate and line managers. These two possible disadvantages were mentioned by respondents to the Conference Board survey. Their comments illustrate a negative point

implication, the duties of the corporate planning unit--as follows: "As the organization's top technical expert and advisor in his field, the core responsibilities of the chief planner are to conceptualize, structure, and proceduralize substance and system for planning and planning-related matters throughout the company." This formulation corresponds closely to the responsibilities of the planning unit during the initiation period of a corporate planning process. Cotton, *op. cit.*, pp. 30,31, also lists the responsibilities or activities for firms with established company-wide planning. "The chief planner [and by implication the corporate planning unit] recurrently provides techniques for development of or contribution to company-wide planning; phrases, with approval of the chief executive, company wide assumptions and constraints governing each planning cycle; maintains liaison with each division, through

of view regarding the notion of a corporate planning unit as an organizational entity in the firm:

"To my mind, the establishment of a staff department, headed by a long-range planning executive, is fundamentally undesirable. This approach institutionalizes the planning process and makes it all too easy for line executives to abdicate their planning responsibility"

"Planning and management are synonymous. You get good planning, not through planning executives or by developing planning systems, but by developing and selecting good managers."

"We wouldn't know what to do with a planning executive. In our company, planning is a function of the chief executive's office that is taking place during all his contacts with managers down the line."

"Planning is a process that should take place among management levels and among line and staff functions. The process should not be complicated by adding an unnecessary obstacle in the form of a planning organization.^{29/}

STAFF COORDINATORS. Some of the Conference Board respondents mentioned that although they do not have a corporate planning unit in their organization, they do assign a coordinative responsibility to someone on the top management staff to handle the administrative and coordinative aspects of the firms' planning processes. According to the Conference Board report, a member of the controller's staff is usually assigned this responsibility.^{30/}

those specifically responsible for the divisional planning function; schedules and coordinates corporate level and interdivisional contributions to company-wide planning; and advises the chief executive concerning the substance, format, and quality of all contributions to company-wide planning."

^{28/} Egerton and Brown. op. cit., p. 33.

^{29/} Ibid., p. 34, 35.

^{30/} Ibid., p. 35.

TASK FORCES. Still others of the corporations responding to the Conference Board survey said that they use ad hoc planning task forces for some purposes within their organization. This does not necessarily mean that they use the task force as a substitute for the corporate planning unit in their firms. They are typically formed for special purposes and provide information, analysis and recommendations on matters such as diversification strategy, new product investments, investments in new industrial processes, market conditions, new market development, acquisitions, environmental trends and their impact on the firm, or specific problems the firm has experienced. Task forces are often organized by the top policy group of the firm when a specific and important problem appears, or when the institutionalized processes of the firm are not equipped to provide needed information or analysis. The top policy group defines the subject to be addressed by the task force, designs its agenda, and supervises its work.^{31/}

Tools for Corporate Planning

There are more tools used by planners in the private sector than can be described within the scope of this paper. There are planning manuals, planning guideline memoranda, computerized simulation and analytical models, forecasting techniques that are of special utility for planning, and management games with a planning orientation. From the point of view of planning organization and planning process, the focus of this report, there are two that should be identified because they are tools for integrating planning with the full range of corporate management processes. These are the planning manual and the planning guidelines memorandum.

^{31/} Ibid., p. 38.

THE PLANNING MANUAL. The planning manual is a basic communications tool with which the chief executive explains his commitment to planning and his expectations for the planning process itself. Hussey describes the purpose of the planning manual as follows:

Planning is a system of communication, and the system must build in opportunities for interdepartmental discussion, as well as discussion up and down the line. Once all the details of the planning system have been decided they should be presented in written form to all involved. The basis of this record should be some form of planning manual, which should show very clearly what part every manager is expected to play in the planning process.^{32/}

The Conference Board, which received a sample of planning manuals during the course of its study of planning and the corporation's chief executive, reports that planning manuals generally contain both planning philosophy and statements of procedure. Elements in the typical planning manual received by the Conference Board are as follows:^{33/}

1. Statement of the purpose of planning and its place in the management process
2. Statement of corporate goals and objectives
3. Definitions of planning or of the different kinds of planning and plans
4. The steps in the planning process
5. Content and form of information to be submitted

^{32/} Hussey, David E. *Introducing Corporate Planning*. Oxford, Pergamon Press, 1971. p. 32.

^{33/} Egerton and Brown. *op. cit.*, p. 35.

To illustrate the variety of planning manuals used by corporations as the basic set of instructions for their planning processes, several examples are given in Appendix III. First, a textbook outline for a planning manual is shown, followed by outlines of example planning manuals selected by the Conference Board in its study. Third, a planning manual used by a major food products corporation is shown in its entirety.

PLANNING GUIDELINES. Planning guideline memoranda are communications tools for providing the corporation's managers with more substantive information than is generally found in planning manuals. Such guideline memoranda contain additional instructions, updated planning calendars, strategic assumptions, the corporation's current operating status, comments on its financial position relevant to planning, environmental assumptions, priorities, constraints, the corporation's accomplishments, new directions, earnings and cash flow targets--whatever is currently pertinent to the firm and its planning and that the chief executive wants to emphasize in the planning cycle. The planning guideline memorandum also serves to remind managers that a new planning cycle is about to begin.

COMMENTS ON PLANNING MANUALS AND GUIDELINES. Corporate planning textbooks comments of respondents to the Conference Board survey, and remarks of participants in the Congressional Seminar on Corporate Planning of December 1975 emphasize the need to avoid rigidity in the planning process as it is set forth in planning manuals and guideline memoranda. Hussey says--

"There is one very real danger in the formalization of planning. The standardization of plan layout can bring the risk of standardization of thought, which would be disastrous to the company. If planning ever becomes a form-filling exercise in the eyes of managers it will be well down the path to failure. To be successful

it must stretch the imagination of each manager, and must force them to throw their thoughts into the future. The planning should be more valuable than the plans themselves.

Any plans that have become dreary "form-filling" will have little value to the company. Now this is an avoidable situation and action starts with the planning manual. When writing the instructions to managers the planner must stick to essentials, and avoid petty detail. He should also try to leave the manager a certain freedom of choice. For instance, it is worthwhile providing a conceptual guideline for market planning, so that all can see the sort of approach required, and the areas of decision to be covered: but he might be unwise to insist that his framework was adhered to rigidly. Having given the guideline, he should encourage managers to approach the problems in their own way. So long as all the points are covered, it does not really matter in which order the manager records them.

...

If there is any overriding message about planning, it is that the processes evolved must have a certain flexibility, so that they do not break at the first crisis."34/

The Conference Board report, which reinforces these cautionary words, says --

"A caveat: if planning guidelines are too detailed or restrictive, they may inhibit creativity or imagination on the part of those involved in the planning process, according to several study participants."35/

HIGHLIGHTS OF CORPORATE RESPONSES TO THE SUBCOMMITTEES' QUESTIONS ON APPROACHES TO CORPORATE PLANNING

The House Subcommittee on Fisheries and Wildlife Conservation and the Environment and the House Subcommittee on Environment and the Atmosphere contacted a number of large corporations to obtain information on their approaches

34/ Hussey. Introducing Corporate Planning. op. cit., pp. 33, 35.

35/ Egerton and Brown. op. cit., p. 38.

to corporate planning, especially with regard to organizational and procedural matters, some of which are discussed in the preceding sections of this chapter. Corporate responses to the subcommittees' questions are given in full in Appendix I; the highlights of their responses are presented in this section.

Question Set No. 1

How would you describe your organization's overall philosophy and approach to coping with changing business environment and with the uncertainties the future? How do your corporate planning activities reflect your philosophy and approach?

Each of the corporations responding to the Subcommittees' request for a written statement indicated that planning was an essential ingredient in its approach to dealing with a changing business environment and with the uncertain future. The link between planning and management, indeed their basic unity, was stressed by most responding firms. Other comments suggested that planning was an essential tool in ensuring the survival of the corporation. One firm said, for example, "Plans--both short-run and long-run--are basic to [our] operations. They are principal management tools. Without them, management would be denied the means of corporation's future. With them, the corporation believes it is equipped to anticipate events, seize opportunities, guard against surprises, and control its destiny rather than permitting events to shunt it about. ...Our failure to anticipate and handle new technologies and to anticipate future needs ... would be deadly for our business."

Beyond the recurrence of the theme that planning was an essential management tool and that planning and implementation are parts of a unity of management functions, there was considerable divergence in the types of comments

respondents made on this set of questions. One firm said that they believe that it is essentially impossible to predict future events. The firm's philosophy is therefore to analyze the consequences, explore the possible impacts of alternative future environments on the firm's interests and to make resource allocation decisions on the basis of which alternative uses have the highest probability of survival within the range of possible future environments.

In quite a different type of statement, one firm said that in its philosophy the planning process was held to be more important than the product of that process, i.e., the plan, although the importance of the plan document was reaffirmed by its use as a gauge to assess performance over the planning period.

Another firm stressed the need to maintain a flexible approach to planning and management and that "planning should be carried on for the purpose of setting needed goals and encouraging action to carry them out."

Still another firm said that its approach to dealing with the changing business environment and the uncertainties of the future was to maintain a continual scanning operation at both the corporation and operating levels and to maintain an awareness of emerging problems or opportunities that could affect the firm's business within each of the countries in the firm's market.

Question Set No. 2

How is your enterprise organized for planning? What planning functions are assigned to the central management of the corporation? What planning functions are assigned to the line divisions? How do the "planners" relate organizationally to those in the executive decision-making chain? To your board of directors? How does central planning relate to line division planning?

Among respondents the typical arrangement of the planning function is to assign it as a staff function at the corporate level and in the operating divisions. At the corporate level its typical function is to assist top management by identifying critical policy questions, by providing early warnings of changes in the business environment, by helping to identify corporate goals and objectives, and to coordinate, stimulate, encourage, and service planning in the operating divisions. At the operating level the planning function was assigned to staff of the managers of individual divisions.

Varying degrees of decentralization of the planning function were described in the respondents' statements. One respondent said, "The planning and control system pervades the entire...organizational structure. It serves as a primary communication link between corporate and operating unit management for establishing unit objectives and strategic direction, negotiating plan commitments and measuring performance against plan. The bulk of the planning done...is not only decentralized into the several operating units, but within any given unit, planning is further decentralized to the plant and laboratory levels."

Question Set No. 3

Within what time frame does your corporation conduct its planning? One year? Five years? Ten years? Longer? Why was your time frame selected? How is long-range planning in your enterprise related to operational, relatively short-range planning and decision-making? How frequently is your planning reviewed and updated? Is plan revision conducted on a periodic basis, or is it triggered by events or by new information?

The time horizons for planning in the responding corporations varies. The five-year period, however, was the most common time frame for long-range

planning. Some interesting exceptions to this were seen in one firm that conducts "exploratory planning" in a 25-year time frame, "global product strategy planning" in seven-year time frame, capital planning for five-year periods, sales and profits planning in three-year periods. Each of these planning activities is revised quarterly, or more frequently if necessary. Another firm said that it uses a 5-15 year period for planning for "technology, plant and people development." All firms emphasized that the planning time horizons which they use have been derived from their experience over the years and are based upon the nature of the planning problem to be faced and upon the lead times inherent in the types of activities that are under consideration.

Most of the corporate respondents to the Subcommittees' inquiry update their plans annually, with more frequent reassessments of the long-range plan performed when circumstances, events, or new information warrant.

Respondents typically reported that long- and short-term planning were related through interaction between the planning and operating functions in the management process and by requiring that shorter-term planning fit within the framework established by longer - term plans. This means that in principle, at least, budgeting is guided by the plan.

Question Set No. 4

What forecasting methods do you use? How would you evaluate their utility? How successful have they been in helping you prepare to meet emerging aspects of the business environment?

Among the responding corporations the forecasting techniques varied according to need. Some firms said they use econometric forecasting obtained on a subscription basis from outside sources. Some firms used delphi techniques for such things as technological forecasting, while others use similar

"panel-of-expert" approaches to forecasting sales and profits. One firm said that sophisticated approaches to regression analysis were used to improve its understanding of key variables that determine the firm's future business environment. Still others stressed the need to maintain a scanning capability to collect a wide variety of information that would indicate possible future developments affecting the business. In general, however, responding corporations did not go into detail in their discussion of the forecasting methods they use as part of their planning process.

Question Set No. 5

What planning methods do you use? Contingency planning? Best- and worst-case scenarios? Computerized planning models that can be frequently updated? Others? Please describe your methods fully. In your judgment, which methods are best suited for handling the problem of uncertainty and the problem of rapid and sometimes surprising changes in the business environment?

Respondents to the Subcommittees' inquiry did not go into methodological detail in answering this question, but they did provide enough information on their planning methods to demonstrate that most of them use a variety of planning techniques either because different techniques are useful for different purposes or because no single technique is sufficiently reliable to be used alone in reaching decisions.

All responding corporations said that they used contingency planning or some form of alternate scenario approach in their overall planning. Computerized planning models are used by most, but some said that their firms did not consider such modeling efforts useful enough to make the heavy investment required.

QUESTION SET NO. 6

What factors other than economic factors do you systematically consider as part of your planning process? How do you include unquantifiable considerations in your corporate strategic planning?

Respondents to this question typically cited governmental and social pressures on business, demographic patterns, lifestyle and social trends, law, and technological evolution as some of the non-economic factors. Some of this information may be quantifiable, but much is not. Its use in the planning process, therefore, depends in large measure on the judgement of those involved in the planning process. One corporation mentioned that it draws upon the knowledge and judgment of outside experts in many of these matters as a supplement to the judgement of the firm's own managers.

QUESTION SET NO. 7

What do you believe is innovative in your approach to corporate planning? Which innovations have been successful? Which have been less than successful but have presented valuable lessons for your corporate planning process?

Most of the corporate respondents tended to play down any claim of innovation on their part. Some disclaimed innovation entirely. One firm, on the other hand, said that its publication and distribution of corporate objectives was innovative. Regarding lessons from unsuccessful efforts, one firm said that its experience demonstrated that planning for periods greater than 5 years was likely to be faulty because of the difficulty in forecasting and assessing the future beyond a five-year period.

QUESTION SET NO. 8

In your judgment, what organizational and procedural aspects of your enterprise's approach to corporate planning might be adapted for application to the Federal Government? What forecasting and planning techniques might be adapted for use in the Federal Government?

Several of the responding corporations gave careful attention to this question and their responses are worth summarizing in the form of a list of all their recommendations. The recommendations fall into five categories: general principles, organizing for planning, the planning process, personnel, and methods and tools.

General Principles

1. If a planning agency were established it "must avoid the temptation to audit results."
2. Planning in government must be consistent with the principle of separation of powers.
3. Beware of overmanaging the American socio-economic system. Remember the advantages of the competitive system and the market place.
4. Beware of unrealistic expectations about what planning can accomplish.
5. Avoid monopolistic public sector performance and provision of services wherever there is any practical alternative.

Organizing for Planning

1. A planning agency must be staffed with experienced professional people. Line experience is invaluable. "Political activists and recent systems graduates would guarantee failure."
2. Redefine congressional committee jurisdiction to facilitate planning of policy, strategy, and operations.
3. A strategic planning process should not be independent of the Executive Branch.
4. The Federal Government should be committed to a decentralized approach to management with a planning system patterned on this concept of management.

5. There should be full involvement in the planning process by government policy officials at all levels, with a relatively low degree of planning being done by professional planners.
6. Top managers must be involved in strategic planning. Accordingly, planning responsibility must be in the White House, and it should be conducted by a group of officials that have no other governmental responsibility.
7. The Office of Management and Budget should not have strategic planning responsibilities because "it is seldom effective to combine long-range planning in the same organizational entity which has responsibility for short-term decisions.
8. Noncareer public servants, supplemented by individuals who have no other governmental responsibilities should play the key policy roles in strategic policy planning.
9. Planning by and for individual agencies must be assessed within the overall Federal context.

The Planning Process

1. Develop clear and consistent objectives for each department and communicate them to all employees.
2. A mechanism to produce clear-cut goals for the country is needed, but it would be useful only if the President, his cabinet, and congressional leaders are willing to make a strong commitment to such an effort.
3. The planning process must be a continuous effort, flexible and responsible.
4. Federal planning should be performed on a continuing basis, annually updating and reassessing -- not a plan set in concrete for a fixed period of years.
5. There should be meaningful personal interface between the Federal officials who would comprise a planning review group in the White House and those assigned the responsibility for proposing operational plans.
6. Federal strategic planning must be concentrated on a limited number of strategic issues, each of which has a significant importance in the American socio-economic system. Limiting the range of strategic planning is especially important during the early years of such an effort.
7. Keep the planning process simple and practical. This is essential to maintain the understanding and involvement of the decision-makers.

8. Although a written, strategic planning document is essential, it is far less important than the benefits that accrue from the discipline of the planning process itself. The planning process should therefore be carefully planned to maximize the benefits that can be derived from it.

Personnel

1. Use non-political economists to produce more accurate and unbiased economic forecasts and econometric models.

2. Non-career public servants, supplemented by individuals who have no other governmental responsibilities should play the key policy roles in strategic policy planning.

Methods and Tools

1. Develop computerized planning models.

2. Test the use of an inexpensive interactive data base for testing alternate scenarios and for quickly answering "What-if" questions.

3. Use "what-if" planning, but use it judiciously, limiting assumptions to be tested to areas which are truly significant. Such planning should be no more complex than is absolutely necessary.

4. Concern over planning techniques must not divert effort away from planning's primary purpose.

5. Planning could improve governmental decision-making by analyzing information, selecting priorities, and monitoring results.

IMPLICATIONS OF CORPORATE PLANNING APPROACHES FOR LONG-RANGE PLANNING IN GOVERNMENT

This report has briefly discussed some of the aspects of planning in the private sector as it is described in current literature on corporate planning and in statements prepared by corporate participants in a recent congressional seminar. It has discussed the relationship between planning and action; it has presented a selection of definitions of planning; it has set forth some of the

various types of planning conducted in the private sector; it has discussed organizational aspects of planning; it has presented some of the principal organizational entities that corporations have established for facilitating the planning process within the corporate management structure; and it has discussed some of the tools most widely used to institute the corporate planning process. The report has also reviewed the responses to the corporate participants in the congressional seminar and has summarized their recommendations regarding establishment of a long-range planning function in the Federal Government. Now, however, the question must be asked, "So what?" What does this information imply with regard to planning in the Federal Government? What lessons are there to be learned from the experience of the private sector?

Before looking for possible lessons there are two questions that must be asked. First, we must ask whether the corporation is sufficiently similar to government in terms of its organizational structure, its operating environment, its purposes, and its accountability for there to be any transference from the one to the other. Clearly, the Federal Government is not driven by the profit motive; it is not dominated by the bottom line. Its motivations and purposes, which in principle reflect those of the pluralistic society it is meant to serve, are multiple, often conflicting, and usually imprecisely stated, if they are stated at all.^{36/}

Such differences are not insignificant, but they are sometimes over-emphasized. The large corporation does face a pluralistic situation. There

^{36/} The goal of reaching the moon by 1970 was the rarest of governmental objectives. It was a precise and unambiguous objective, a simple standard against which to measure success or failure,

are the stockholders, the employees as individuals, organized labor, the middle managers, the top managers, the individual divisions of the company, consumers, and the government among those whose purposes and objectives affect corporate decisions. Although the corporation is quite different from government, the pluralistic situation in both government and the corporation means that decisions and actions in both situations must be undertaken in an environment of complexity. It is complexity itself that is the common factor.

It is often said that top management of a large corporation plays a relatively dictatorial role in setting purposes and commanding action down the line to achieve those purposes. Most top managers would probably be inclined to disagree with such a simplistic view. A large corporation has its factions, its interest blocks, its bureaucratic institutions as does government. The problem of motivating personnel down the line is not solved merely by edict. The firm's purposes are not set forth without consultation and conflict within the firm. On the other hand, the corporation is not a democratic organization, nor is it organized according to a Constitution that requires a separation of powers with its system of checks and balances.

One of the principal differences between the corporation and the government is ^{that} the continuity of top management of the Executive Branch is subject to change every four years. Below the level of President, top managers may and often do change more frequently. Important policy and management decisions may therefore be made by individuals who have not been in the governmental system long enough to understand the areas of possible overlap and conflict in policy and program. It also results in many important policy and programmatic decisions being made within individual bureaucracies by career civil servants at levels where the decision-maker is insulated and isolated from

decision-makers in other bureaucracies where potentially related decisions are also being made. The private corporation can draw its top management from among those who have a number of years of both operating and corporate experience under their belts and who therefore provide continuity to the top management of the firm. Some would argue, however, that continuity of management in the private sector is easy to overstate. Promotions and other forms of mobility in the private sector have a significant impact. 37/

Finally, what is transferable from the private sector is related most directly to the Executive Branch rather than to Congress because the corporate organization is executive by its very nature.

The second basic question we must ask deals with the success of corporate planning. Has corporate planning really been worth the effort? This report has been based almost entirely upon the writings and comments of corporate planners themselves. They are not without their pro-planning biases, and they should be expected to support the planning idea in business. There is little, hard objective evidence, however, that demonstrates conclusively that corporate planning has had a positive pay-off. Neither is there sufficient hard evidence to demonstrate that business planning has been a failure. What is noticeable is an emerging body of critical literature that is beginning to provide a balance to the pro-planning literature, and this emerging literature suggests that the benefits of corporate planning may have been overstated. For example, Louis Gerstner notes that "the most fundamental weakness of most corporate plans today is that they do not lead to the major decisions

37/ Gerstner, Louis V., Jr. Can Strategic Planning Pay Off? Business Horizons, December 1972. p. 9.

that must be made currently to ensure the success of the enterprise in the future."38/ Murray Weidenbaum writes --

In a study of thirteen large, technically oriented manufacturing companies, the author and his colleagues reported that most of the output of long-range planning groups was found to be more in the nature of scheduling current programs with long lead times, rather than in the development of long-range business plans.39/

Weidenbaum suggests that the survival of planning staff units in corporations may be explained as much by the collateral functions they perform as by their long range strategic planning.40/

It is not possible at this time to judge whether the weight of the argument supports the pro-planners or the anti-planners. The point that can be made, however, is that one might be well advised not to jump to the conclusion that business planning has lived up to all expectations.

With these points of comparison and caution in mind, it does appear possible to summarize the following points of general guidance from private sector planners:

1. The Linkage between Planning and Doing

The first and perhaps the most obvious lesson that a planning practitioner in the private sector would want to teach the Federal Government is to make sure that governmental planning is directly related to governmental policy-

38/ Ibid., p. 7.

39/ Wiedenbaum, Murray L. The Contrast between Government Planning and Business Planning: Market Orientation versus Centralized Control. Washington University. Center for the Study of American Business. Working Paper Number St. Louis, February 1976. p. 14.

40/ Ibid., p. 5.

making and management activity. Planning should not be seen as something done outside of management, but as an integral part of the overall governmental management process. The experience of the private sector, the comments of participants in the congressional seminar on corporate planning, and the literature all emphasize that separating the planning function from the doing function leads to meaningless planning exercises.

2. Placement of the Planning Function

In organizational terms, the need to link planning and doing suggests that a planning capacity should be created to support executive decision-making at the highest level in the Federal Government and in the top management of each executive agency. Support for planning might come from staff units that report to the decision-makers at each of these levels, but the private sector experience suggests that it is the decision-makers themselves--the managers of the Executive Branch and its agencies--who should be the real planners. It is they who must sense the relationship between short-term decisions and longer-term policies. It is they who must see the linkages among policies and actions of individual Executive agencies. It is they, after all, who must make the decisions. Donald Conover, corporate planner for Western Electric, summed up this point of view, so dominant in the private sector, by saying: "The real planners are the managers who make the final decisions, and what we call planning is the support service intended to help make those decisions better."^{41/} A planning institution outside the Executive Branch decision-making processes would be inconsistent with the logic of this argument.

^{41/} Conover, Donald. Remarks during congressional seminar on corporate planning, Library of Congress, December 1975. Chester Cooper, who also participated in the congressional seminar made an analogous point with regard to policy analysis. He said that if policy analysis was to be truly assimilated and used by public decision-makers, the decision-makers should be policy analysts; and the policy analysts, decision-makers.

This is the classic argument presented in the corporate planning literature and by practitioners of corporate planning, but it could be argued on the other hand--and indeed it was so argued during the congressional seminar on corporate planning--that the lack of continuity at high levels in the Executive Branch and its agencies which is built into the national election cycles hinders long-term planning, and that what is needed is an independent institutional entity that is not so sensitive to the election cycle and the comings and goings of top government managers to provide long-range planning support services to the Executive Branch. This argument also included support for some sort of similar planning support service to the Congress.

In spite of the argument, which corporate planners participating in the seminar agreed reflected a serious problem, the participating planners did not waver in their judgment that an independent planning institution would be ignored by the top management of the Executive Branch and would be a mistake.

3. Commitment to Planning by Top Management

Another point stressed repeatedly in the corporate planning literature and by participants in the seminar was the need for a clear commitment to long-range planning on the part of top organizational management if planning is to be effectively instituted. This would appear to be directly applicable to the Federal Government. Unless the President is committed to long-term planning, strategic assessment, and policy coordination, one could argue that it is improbable that long-term planning would happen. If the heads of individual executive agencies are not committed to long-term planning for their agencies, it is also improbable that the individual agency would adopt a long-term planning perspective. History tends to support this argument. Otis Graham's recent

history of the planning idea in the Federal Government since the 1930's documents the decline of the planning idea when Presidents were not interested or when Presidents who were interested in longer-range planning and policy coordination were distracted by events.

4. Continuity

It is often said that the lack of continuity in the top management of the Federal Government and its agencies is a major hinderance to long-term planning. The private sector experience does not speak to this problem except perhaps by contrast, as noted early in this report. Whether this problem can be overcome by clever organizational arrangements is not entirely clear. It could be argued that discontinuities in the top management are not as important as the continuing commitment to the planning idea on the part of those who successively pass through top management positions in the government and that no amount of organizational shuffling will make much difference without such a commitment by those in positions of top leadership, whoever they be.

5. Planning Services to Decision-Makers

The types of services that corporate planning units provide to corporate and operations management in the private sector are analogous to the types of services that a governmental planning unit could provide to the governmental decision-makers to whom it reports. These services could include such things as foresight based on forecasting and on scanning of the environment for signs of future problems or opportunities, identification and clarification of issues that need to be addressed by the decision-makers, drafting of alternative objectives for governmental policy and action, review and analysis of

alternative policies and programs intended to achieve objectives, including assessment of the future impact of alternative policies and programs in terms of the distribution of economic and social costs and benefits. In short, its professional service to decision-makers would consist of ensuring that the decision-makers have the inputs they require in order to make rational decisions in the face of a rapidly changing environment, that important matters were not overlooked because of pressures of the moment, and that the decision-makers fully understood the future results of today's decisions on policy and program matters.

Appendix I. Forms of Corporate Planning.
Some Alternate Approaches to Classification

Appendix I.

FORMS OF CORPORATE PLANNING

Some Alternate Approaches to Classification

Different scholars and different organization categorize the various forms of planning in varying ways, as the body of this report points out. Although it is generally satisfactory to distinguish among strategic, operational and project planning to understand the range of planning activities undertaken by the private sector, other taxonomies or classification schemes provide additional illustration of the variety. This appendix sets forth some of these alternate ways to classify types of corporate planning.

Normative and Descriptive Planning

Planning that aims at carrying out the directive of higher authority is said to be "normative." Such a directive is typically a statement of some future condition or end result that is desired by top management. In other words, such a directive is a statement of the way things should be at some future time. Normative planning is the design of courses of action to achieve that future status.

Descriptive planning is conditional. It is initiated by the question, "What if...?" It is aimed at development of alternative courses of action the firm should consider taking in the event that the stated conditions prevail. Descriptive planning is often exploratory, tentative and focused on contingencies the firm should prepare for.

Strategic and Operational Planning

According to a study by the Conference Board, the most frequently drawn distinction between forms of planning is between strategic and operational planning.

STRATEGIC PLANNING: In the Conference Board formulation, strategic planning has a relatively long time horizon, and it is addressed to questions of fundamental company policy and on the directions the company should take. A typical subject for strategic planning is the formulation of company policy on how much emphasis to give to new products and markets relative to existing products and markets.^{42/}

^{42/} Egerton, Henry C. James K. Brown. Planning and the Chief Executive. Conference Board Report No. 571. New York, The Conference Board, Inc., 1972. p. 3.

OPERATIONAL PLANNING: Operational planning covers a relative short period of time--one year is the usual time period--and it is focused on action programs aimed at achieving particular goals during the time period. It specifies the resources and actions that are required to achieve the stated goals. According to the Conference Board report, operational planning tends to be more formal and more detailed than strategic planning; and there is supposed to be a close fit between operating plans and actual performance of the corporation's operating division using the plan, while strategic planning is more general and tentative.

Strategic, Short-Term, and Project Planning

Some of the corporate respondents participating in the Conference Board study of planning and the chief executive use a different taxonomy to describe their planning activities. The most common taxonomy after the strategic-operational formula is a tripartite taxonomy that includes strategic planning, short-term planning, and project planning.

STRATEGIC PLANNING. Some firms focus their strategic planning in major geographic divisions of the world, first on continents and then on countries where development of the firm's interest is being considered, with special attention to the political and investment environments. This strategic planning forms the framework within which short-term and project planning take place.

SHORT-TERM PLANNING. Short-term planning covers a period of from one to three years and serves to control operations and as authority for investment in the firm's projects.

PROJECT PLANNING. Project planning covers the development of individual activities--mines are typical examples of such activities--from the initiation of the effort to the moment when the activity is in full-scale production.

Strategic, Operating, and Project Planning

D.E. Hussey, planning manager for Otis Elevator Co., Ltd., London, and prolific writer on corporate planning practice, suggests a similar taxonomy:^{43/}

STRATEGIC PLANNING. The strategic plan sets forth the company's objectives and the means or strategies by which the company intends to reach those objectives.

OPERATING PLANNING: An operating plan is the plan of an established, functioning part of the company--one of its divisions or subsidiaries.

PROJECT PLANNING: A project plan covers a specific, particular operation, be it a capital investment operation or a marketing operation.

Hussey further elaborates this scheme by identifying specific planning efforts with the strategic management of the firm and the operating management. On the strategic side there are divestment plans, diversification plans and acquisition plans that focus on new products for new and existing markets. Overall corporate improvement plans and research and development plans also can be part of the firm's strategic management. On the operating management side there are marketing plans, facilities plans and production plans aimed at existing products for existing markets and at new markets for existing products. Improvement plans and research and development plans are also directed to questions of operational management.

^{43/} Hussey, David E. Introducing Corporate Planning. Oxford, Pergamon Press, 1971, p. 13.

ANNUAL OPERATING PLANNING. Within this scheme of classification, annual operating planning is substantially the same as operational planning described earlier. It amounts to a relatively detailed plan to achieve the desired results over the subsequent one-year period.

Policy, Strategic and Operations Planning

This categorization of the types or levels of planning is in some respect similar to the preceding taxonomy. The term policy planning is quite similar to what was called conceptual planning.

POLICY PLANNING. Policy planning is addressed to the basic purposes of the organization and to establishing the internal framework or environment for the organization's operations. It is general, long-term, judgmental, and company-wide.

STRATEGIC PLANNING. In this taxonomy, strategic planning deals with changes in corporate direction and with reallocation of resources to respond to important changes in the operating environment. Matters dealt with by strategic planning are largely, but not always, external to the organization, e.g., shifts in the economy, in the availability or price of factor inputs, long-term changes in market demand, technological breakthroughs, and therefore may or may not fall within the framework of established organizational policy. One corporate planner has called strategic planning in this taxonomy "a more sophisticated alternative to the quality of management once known as 'vision.'"⁴

^{44/} Conover, Donald. Comment during the Congressional Seminar on Corporate Planning. Library of Congress. December 1975.

Strategic, Development and Operating Planning

Some of the respondents in the Conference Board study use still another taxonomy for classifying their planning operations. This classification system includes strategic planning, development planning, and operational planning.

STRATEGIC PLANNING. Strategic planning, as in previous classification schemes, is aimed at establishing the firm's purposes, its desired ends, its business methods and the types of activities it will be involved in.

DEVELOPMENT PLANNING. Development planning is aimed at designing and evaluating the firm's alternatives for making changes and for pursuing the ends set forth by the strategic planning process. It combines both normative and descriptive planning activities.

OPERATING PLANNING. In this classification system, operational planning is aimed at establishing the organizational structure of the firm and at allocating the firm's capital among major uses. The development of divisional and departmental plans for such matters as engineering, production, sales, marketing, capital and profits falls in this category of planning.

Conceptual, Strategic, and Annual Operating Planning

CONCEPTUAL PLANNING. Some firms use the term "conceptual planning" to indicate planning aimed at determining the corporate mission, the businesses the corporation should be involved in, and overall corporate objectives and goals.

STRATEGIC PLANNING. When the "conceptual planning" designation is used, the term "strategic planning" often refers to planning of the changes and modifications that are required in order to achieve the purposes and ends set forth in the corporation's conceptual planning.

OPERATIONAL PLANNING. Operational planning in this taxonomy is basically the same as operational planning in other taxonomies presented in this appendix. It consists of setting operating goals, specifying actions, and allocating resources to achieve established organizational objectives.

Relationships among Levels of Planning

In each of these tripartite classification systems for planning within the corporation, the relationship among the elements is hierarchical. That is, strategic planning establishes the framework for short-term planning; and short-term planning sets the framework for project planning.

Appendix II. Written Statements Submitted to the Subcommittee by
Corporate Participants in the Congressional Seminar
on Corporate Planning

AMERICAN TELEPHONE AND TELEGRAPH COMPANY

2000 L STREET, NORTHWEST

WASHINGTON, D. C. 20036

PETER D. COQUILLETTE
EXECUTIVE ASSISTANT

202 466-4510

December 5, 1975

Mr. James W. Spensley
Counsel
Committee on Merchant Marine and
Fisheries
Room 1334, Longworth House Office Building
Washington, D. C. 20515

Dear Mr. Spensley:

Attached, per the request of Chairman Brown of the Subcommittee on Fisheries and Wildlife Conservation and the Environment, is a written report from the Western Electric Company on Long Range Planning. I have taken the liberty of delivering a copy of this same report to Mr. Frank Hammill Counsel to the House Science and Technology Subcommittee on the Environment and the Atmosphere.

If you should have any further questions feel free to call me on 466-4510 here in Washington or the author of the report Mr. Donald Conover who may be reached at Western Electric Headquarters in New York on 212-571-6142.

Sincerely,



Attachment
copy to Frank Hammill

PLANNING AT WESTERN ELECTRIC

A special report prepared for
Congressional Subcommittees
on Fisheries and Wildlife
Conservation, and Environment
and the Atmosphere.

Western Electric Co. Inc.
December 3, 1975

INTRODUCTION

Planning can be approached either as a collection of techniques or as a process. The techniques are the nuts and bolts, methodologies for dealing with specific planning within the management of an organization.

Since it is not practical to attempt covering all aspects of planning in a brief report, the emphasis will be on process. Planning will be represented as a function which supports a forward-looking decision-making process in which a wider range of information is marshalled, alternatives explored, and action-oriented decisions reached. In this context, what is commonly thought of as planning usually emphasizes the support functions of a planning staff. That is the professional part of the process, but by itself it is not planning. The real planners are the managers who make the final decisions, and what we call planning is the support service intended to help make those decisions better.

The current intensification of interest in planning represents a desire to clarify direction and coordinate the use of resources in complex situations. Accelerating change, uncertainties in the economy, and conflicting ideas about such basic values as growth, conservation, and life style have had a double-barreled effect on traditional institutions. Simplistic organizational objectives are inadequate to meet the demands of today's complexities, and goals for the future continue to blur the boundaries between individual institutions and the society as a whole.

As a process to deal with so much uncertainty, it must be said that the promise of planning is running far ahead of its ability to solve the many problems presented. There is some fear that an overly deterministic approach to planning could stifle creative responses to unforeseen events. The one certain observation to be made is that planning is not a panacea to be imposed in place of traditional strengths

of the democratic process or of free enterprise. What planning can do is provide more future-oriented information and more orderly processes in support of traditional decision-making responsibilities. In these terms, planning can be seen as an important part of the race to advance social skills in tune with the pace of scientific and technological development.

The apprehension which exists about planning stems from the implied structuring of decisions potentially spanning the gap between policy and action. Viewed in a vacuum, it might be concluded that planning would so closely knit large scale objectives with small scale actions that a lock-step society would eventually result. Happily, the development of planning is not taking place in such a vacuum.

Instead, planning is developing along several fronts, loosely connected and substantially moderated by traditional checks and balances. In large, complex organizational settings different types of planning are being developed to support, not take over, the traditional responsibilities of leadership, administration, and control.

PLANNING AT WESTERN ELECTRIC

In discussing the planning scene at Western Electric, the emphasis will be on patterns of planning which help the company meet a balanced set of objectives. The aim is to describe an overall viewpoint about planning which may be helpful in considering the planning needs in Government. This report will not attempt to describe particular planning techniques since these are readily available in text books and other public documents.

To understand Western Electric's planning process, it is necessary to distinguish among policy planning, strategic planning, and operational planning. As will be seen, these are not precise definitions. Rather, they refer to different levels of generality for which different procedural approaches are appropriate. For example, operational planning has always required continuous monitoring while

policy and strategy could be dealt with as conditions changed. As more changes in the environment have occurred more frequently, all planning has been shifting from an "as needed" function to an ongoing process within the framework of management decision-making.

Each type of planning presents unique problems calling for specialized handling. Integration of planning decisions is necessary, but that occurs within the framework of existing management structure with the result that planning and the overall management process appear as one.

POLICY PLANNING

Policy planning deals with the basic purpose of the organization and with the guidelines which establish the internal environment for operations. By its nature, policy is general in its direction and tends to reach across a long time span. In Western Electric, the basic purpose of the organization is determined by the Company's place in the Bell System--manufacturing and supply unit. Within this framework, top management actively participates in establishing policy.

The formal structure for policy planning consists of a hierarchy of interdisciplinary committees representing different functional organizations. For example, a General Personnel Committee (GPC) is responsible for regular review of the Company's management of people. The Personnel Organization provides analysis of trends and reports on the effectiveness of various programs. Line organizations periodically call attention to problems and opportunities affecting the Company's personnel relations. When a new program is suggested, the GPC acts as a clearing house to evaluate the likely impact on all of the organizations which could be affected. Usually a program will undergo a certain amount of modification before it is approved. Once approved, in addition to formal announcements, the Committee members become responsible for communicating the decision back within their own organizations.

Implicit in the above is the fact that policy decisions are judgmental and often depend on touching base with a broad cross section of the organization before reaching a decision. Although it is not expected that this basic approach to policy planning will change, there are methodological improvements being developed.

For example, 1974 was the fiftieth anniversary of the Company's formal policy document describing the guidelines for supervisory relations with employees. A fundamental review of the policy was initiated to determine if any changes were in order. To collect ideas and focus on priorities, the Delphi Process was used to solicit comment from three different groups--the Company's Personnel managers, a group of personnel executives in other companies, and a group of college professors specializing in personnel management. The findings from this study were reviewed with a group of first-level supervisors and with a group of non-supervisory employees before the General Personnel Committee decided what changes to make.

The example is significant for two reasons. First, it demonstrated that a planning technique could help in the collection and analysis of judgments, thus saving time and money. Second, it provided an effective means for tapping a wider segment of experience, inside and outside the Company, hopefully leading to better decisions.

Other planning techniques also have the potential for aiding in policy planning. Cross Impact Analysis and scenario building should be helpful in providing management with a better understanding of the changing environment. The important distinction is that the techniques are aimed at a better understanding of the environment. They do not produce policy; that is still an area of individual or group judgment.

OPERATIONAL PLANNING

Operational planning involves planning the goals and use of resources to achieve established company objectives. In general, the existing functional organizations of a company are responsible for most of the operating plans. Time horizons vary depending on practical limitation. Corporate coordination is achieved by consolidating divisional plans and making adjustments as required to assure that the sum of the parts equal a satisfactory whole.

In Western Electric the operational goals aim at manufacturing and service objectives to support the needs of the Bell System for products and service. Manufacturing is organized by product lines, and service is organized to correspond with the areas served by the associated Bell Telephone Companies. In addition, various staff divisions provide administrative support to the Company's operations.

Operational plans are developed to use divisional resources most effectively to realize company objectives. These involve both routine and special functional plans. For example, the Engineering Division annually plans how much manufacturing capacity will be required to meet sales forecasts in each product line. This takes into account a wide range of variables such as the use of extra shifts or overtime, and estimated increases in productivity.

The most obvious example of a more specialized operating plan is the introduction of a new product. Here the basic approach involves coordinating the efforts of many different groups and usually takes the form of a special project. Tri-Company representation (AT&T, W.E., and B.T.L.) is provided by means of a committee representing customer, supplier, and designer. Within Western Electric, different interested organizations become involved, each to plan its role to introduce the product successfully in coordination with actions being taken elsewhere in the Company.

The important distinction between policy planning and operational planning is that policy describes purpose and environment, whereas operations involve goals and actions.

However, there are some useful generalizations to be made relating to trends toward a common data base for planning, more sophisticated forecasting techniques, the use of decision theory, the analysis of variables and more attention to overall coordination. The capability to store, assimilate, and retrieve more information using large computers has reduced the effort to assemble information leaving more time for analysis. As a consequence, regression analysis of trends as an aid to forecasting has become much more sophisticated. More information is available about different aspects of the business and a wide variety of programs are available to use the information. One consequence is the growth of organizations whose principal function is to help others plan. General purpose projections of economic, demographic, and performance trends are routinely furnished to line organizations to assist with their operational planning. Specialized analysis is available upon request. At present such services tend to be organized to respond to organizational needs. In the future, it seems reasonable to expect that such analysis will also be used to identify issues for which planning is required.

Various decision-making analyses are available as the result of advances in management science, principally operations research. In addition to more sophisticated use of information and allocation of resources, the impact on management has been to introduce a new professional resource, the management scientist. The benefits are better planning to choose optimal solutions (if they exist) and better use of information to manage probabilistic situations. Coupled with uncertainties in the environment, this means more attention to contingencies, more prior attention to what-if situations, and more searching examination of planning assumptions. The disadvantage is that the decision-making process is somewhat divided between a specialist with problem-solving skills and a manager with operating experience and responsibility for results.

The overall effect is a heightened awareness of the need to plan the planning process itself. More time is devoted to the establishment of priorities. Where possible, common time horizons and shared planning data is being used to assure coordination. And perhaps most important, more attention is being directed to the interaction of one functional plan upon another.

STRATEGIC PLANNING

Strategic planning involves changing corporate direction and reallocating resources to accommodate a significant change in the operating environment. This may involve such things as taking advantage of a technological breakthrough, responding to shifts in the economy, or meeting a newly developed market demand. As such, strategic planning falls between policy and operations. It represents a deviation in trend as compared with previous operations, but it may well be within the framework of established policy.

The distinctive feature of strategic planning is that with accelerating change it must increasingly become a continuous process rather than a periodic activity. This led to a more formalized strategic planning capability. Thus, it becomes important to distinguish between a discontinuous and a continuous strategic planning process. The key difference is the way in which changes triggering strategic planning are detected.

As strategic planning is evolving, the added feature is a more formal approach toward environmental assessment. By means of more future-oriented analysis an effort is being made to detect possible changes for which strategic decisions will become necessary. This allows more time to plan an appropriate response. In a sense, strategic planning may be thought of as a more sophisticated alternative to the quality of management once known as "vision."

In Western Electric, the principal responsibility for strategic planning rests with a committee of Vice Presidents representing all major parts of the Company. They review issues in which important changes may affect Company operations, and then assign projects to the appropriate functional organization for analysis and development. If the project uncovers the need to take action, a proposal is prepared and presented to top management for a decision. Such projects are necessarily exploratory, sometimes leading to a major (strategic) decision, other times simply leading to an improvement in existing operations.

As an example of a project under way but not yet complete, a study was authorized to examine what factors will be most important in determining employee morale and effectiveness in the future. Both the Personnel and the Corporate Planning Organizations are involved. When complete, the study will provide an assessment for the period ten years ahead in terms of which the effectiveness of existing personnel programs can be examined. The study methodology being used is a form of Cross Impact Analysis. Trends and possible developments in the American society are being compared against conditions of work to see if the environment changes, what impact that might have in the workplace. The study is just getting under way, so there are no conclusions yet.

There is no set pattern for strategic planning. Western Electric's development has been geared to its own needs, taking into account its role in the Bell System. Each issue is handled as a separate case. What can be generalized are two points of increasing importance. The first is the need for information, usually involving inputs from a wide variety of functional organizations. The second is the need to examine alternative solutions and their consistency with environmental assumptions regarding expected changes before reaching a decision.

IMPLICATIONS FOR GOVERNMENT PLANNING

Three issues would seem to stand out as areas where planning competence can lead to better results and more effective use of resources. They are the use of planning groups to analyze information, the importance of selecting priorities, and the need to monitor results.

Planning groups to provide information should be multi-disciplinary and free to formulate tentative approaches for solving problems even though decision-making authority is reserved to traditional agencies. Thus, a comprehensive assessment of environmental changes is the first step in deciding what changes in policy, strategy, or operations may be appropriate. This should involve projections of future developments, estimates of both probability and impact of possible changes, and evaluation of the strengths and weaknesses of existing procedures. Then, alternative solutions can be developed to suggest how resources might be employed to meet the expected situation. This differs from traditional approaches in that planning is used to explore first if a problem exists and then to develop alternative solutions. (Traditionally, a planning group is told what the problem is and asked to find a solution.)

The importance of priorities follows naturally. If problems are addressed separately or as they occur, the result tends to be a patchwork of programs and modifications to existing programs which are often unwieldy and may consume unnecessary resources, particularly if the preservation of existing organizational structures is arbitrarily maintained. For example, an outsider's view of the different Congressional Committees with an interest in energy suggests that there has been no prioritization of what is involved in formulating a national energy policy. As issues arise, it is to be expected that more than one committee may be concerned. What is needed is a mechanism to assess the importance and assign responsibility for developing a solution even if it involves a certain amount of restructuring. (Otherwise, the tendency is to deal only with issues of limited scope already matched by a standing committee's jurisdiction.)

Perhaps most important is making the distinction among policy, strategy, and operations. Policy establishes the "tone," strategy the direction, and operations the programs for action. Following a scheme which establishes priorities first for policy, then strategy and finally operations will not eliminate complexity, but it will certainly reduce it and provide a sounder basis for action. By implication this suggests a possible redefinition of various committee charters to distinguish their purpose, e.g., energy policy, energy strategy, and energy programs.

The need for control applies to both planning and implementation. There needs to be some process to assure that analysis and planning are being directed to the highest priority issues, that subordinate issues are not permitted to consume limited resources or to obstruct progress, and that once a decision is reached, resources (organization charters, funds, etc.) are allocated appropriately. This implies the need for some formalization of the planning function, perhaps along the lines of the new budgetary process. The distinction between planning and budgets is important. The budget deals with a single resource--dollars, and is measurable. Planning deals with all resources and is concerned with both tangible and intangible results. Some coordination of the overall planning process is necessary.

In conclusion, a perspective on planning has been presented which focuses on three different types of planning. The specificity and time horizons has been shown to vary. A variety of forecasting and analytical tools exist to help planning, but the tools have been represented as less important than the process.

Although something of a simplification, what seems most important is that planning should be planned. In Western Electric this means identifying functional responsibility and providing an organizational process to assign the planning objectives to a sufficiently high management group to assure effective management of a planning staff resource, identification of priorities, and control over implementation and results. In view of the complex and changing legislative environment, it would seem that a similar structuring of the planning process might also be helpful in government.

Atlantic Petroleum Company

Corporate Planning Division
 515 South Flower Street
 Mailing Address: Box 2679 - T.A.
 Los Angeles, California 90051
 Telephone 213 486 1750



Robert E. Wycoff
 Vice President

December 3, 1975

Honorable Robert L. Leggett, Chairman
 Subcommittee on Fisheries and Wildlife Conservation
 and the Environment
 Room 1334, Longworth House Office Building
 Washington, D. C. 20515

Dear Mr. Leggett:

As we promised in our letter of November 6, we are attaching our responses to your questionnaire on our planning organization and process.

We laud your efforts to establish a system whereby long term consideration is given to the effects of various pieces of legislation. Energy is a good example where legislation might be entirely different if the futurity of present decisions were considered. We would only caution, in our view the market economy rather than central planning is the optimum mechanism for maximizing the common good.

We hope our responses to the questions will be useful. We feel that the questions themselves were well conceived. Our responses should give you a fairly complete picture of our planning organization and processes.

Please do not hesitate to call me should more elaboration be desired. We would be happy to personally participate in your seminar.

Yours very truly,

R. E. Wycoff
 R. E. Wycoff

ATLANTIC RICHFIELD COMPANY'S ANSWERS TO QUESTIONS ON CORPORATE PLANNING
ORGANIZATION AND PROCESS

- 1.a How would you describe your organization's overall philosophy and approach to coping with changing business environments and with the uncertainties of the future?

We hold the philosophy that it is impossible to predict the future. In depth analysis of the leveraging most consequential factors is, however, a fruitful approach to testing alternative future events. We look at planning as a useful process for analyzing the consequence of alternative actions against a background of alternative environments. Decisions on financial and operating strategies including project selection and capital allocations may then be made on the basis of those which best survive a range of possible environments.

- 1.b How do your corporate planning activities reflect your philosophy and approach?

Our Corporate Planning Division identifies and commissions studies to investigate a range of alternative environments over the next 10 to 15 years. Key aspects of several identified alternative environments are presented as scenarios. For instance:

<u>Factor</u>	<u>Scenario I</u>	<u>Scenario II</u>
Political Environment	The political process acts in the long term economic/security best interest of country	Congress looks only to next election
Economic Environment	Economy Steadies	Economy is Cyclical
Prices	Free Market	Government Controlled

Corporate Planning leads the analysis of the effect of these scenarios on the energy supply and demand, prices, Company and Industry profits, cash flow and financible investment levels. The ranges of economic viability for investment in various areas of the energy business would also be tested.

The key scenario choices along with their associated effects are presented to top corporate management from which they choose a set of useful "assumptions" for promulgating to the operating divisions for tactical plan development. Top management also chooses a set of strategy guidelines for the Company. These guidelines essentially select the nature and priorities for the businesses the Company will choose. A selection

set of strategy guidelines previously will have been intensively discussed by the Corporate Planning staff with divisional planners and operating management.

The environmental assumptions and strategy guidelines along with preliminary assumptions on capital availability are promulgated to the operating divisions. The divisions are then charged to develop programs responsive to and consistent with the strategy guidelines at several alternative capital allocation levels and to quantify their plans in terms of profits, cash flow, and capital spending. The division's plans are submitted to top management for their consideration. The Planning staff then consolidates and integrates the plan and analyzes it to see that it accomplished the desired strategic goals. The Corporate Planning staff presents recommendations to top management for their decision.

Since the environment is constantly changing, frequent updates of the program content are necessary. Periodic reviews of the strategic and economic viability of the various projects are made with top management. Adjustments to the adopted plan are made as necessary.

2. How is your enterprise organized for planning? What planning functions are assigned to the central management of the corporation? What planning functions are assigned to the line divisions? How do the "planners" relate organizationally to choose in the executive decision-making chain to your board of directors? How does central planning relate to line division planning and action?

The attached organization chart (Attachment I) shows where the Corporate Planning function fits into the corporate hierarchy; Attachment 2 outlines the role of the groups in Corporate Planning, and is also instructive as to the role the Corporate Planning Division plays. An additional Attachment 3 illustrates how the planning process at the corporate level relates to that in one of our operating divisions, the International Division. In general, The Corporate Planning staff functions as staff to the top working group in the Company, the Executive Group. The Executive Group is composed of the three Executive Vice Presidents, the Vice Chairman, the President, and the Chairman of the Board. It assists the Executive Group in identifying the critical policy questions as well as formulates strategy guidelines and environmental assumptions. The Corporate Planning Division also has the responsibility for developing, nurturing and administering the corporate planning process itself as well as the responsibility to coordinate and integrate the tactical plans of the operating divisions. The divisional planners act as staff to operating divisions management, to collect and recommend specific projects to their management and responses to the Executive Group selected guidelines. The Board of Directors is the ultimate approving body of the Company's formal Long Range Plan.

- 3.a Within what time frame does your corporation conduct its planning? One year? Five years? Ten years? Longer? Why was your time frame selected?

We generally use a 15 year time frame for our planning. This is because in the oil business lead times of from 5 to 10 years are frequently required from decision to production. Our financial projections, however, do not extend beyond 5 years as we have diminished confidence in quantifiable projections with time.

- 3.b How is long-range planning in your enterprise related to operational, relatively short-range planning and decision making?

Short term operation planning in the Company is done as part of our annual 2 year budget process. The budget process starts in mid-year with the first two years of the 5 year plan as an initial assumption. The long-range planning process in turn starts at year-end with the completed budget as an initial assumption for the first two years. The long-range plan places greater emphasis on strategies (types of businesses, types of projects). The budget is much more detailed in its attempts to quantify and control the financial results of operations over the immediate year.

- 3.c How frequently is your planning reviewed and updated? Is plan revision conducted on a periodic basis, or is it triggered by events or by new information?

The long-range plan is typically reviewed bi-monthly but the review period is not automatic. The review is generally triggered by events or by new key and leveraging information. Our long range planning is a continuous process.

4. What forecasting methods do you use? How would you evaluate their utility? How successful have they been in helping you prepare to meet emerging aspects of the business environment?

At the Corporate Planning level, we rely heavily on scenarios which are internally consistent and which attempt to bracket the environments in which we expect to operate. In some areas of forecasting such as energy supply and demand, we use combinations of several methods; elements of technological forecasts, Delphi studies, trend extrapolation, and external consultants. On key issues, we search out expert opinion both within the Company and among the external leading authorities on the subject. For economic forecasts, we develop alternative scenarios, making heavy use of econometric models.

- 5.a What planning methods do you use? Contingency planning? Best-and-worst case scenarios? Computerized planning models that can be frequently updated? Others? Please describe your methods fully.

We use all three of the planning methods you mentioned: Contingency planning, multiple case scenarios, and simple planning models. The

impact of events on our financial plans is followed fairly regularly. For this we use a computerized model. This computer program generates accounting and financially oriented reports. It has proved to be a very useful simple tool. We see little benefit to be gained by increasing its sophistication. Other models, both manual and computerized, are used for testing oil industry financial viability and energy supply, demand and price scenarios.

- 5.b In your judgment, which methods are best suited for handling the problem of uncertainty and the problem of rapid and sometimes surprising changes in the business environment?

The problem of unexpected environmental changes is primarily addressed by contingency planning based on alternative scenarios. The key, in our view, is to have in your organization extremely knowledgeable people who can accurately perceive the major implications of major changes in the environment to our businesses. They must have open minds concerning the possibility of "surprises" occurring.

- 6.a What factors other than economic factors do you systematically consider as part of your planning process? How do you include unquantifiable considerations in your corporate strategic planning.

We consider non-economic factors because they greatly affect the economic factors in the long-range sense. For example, societal attitudes are expected to affect the future structure and economics of the industry, hence, we examine contingent effects. Consumer attitudes toward lower prices on the one hand versus likely energy insufficiency are considered in arriving at judgments. Corporate social responsibility, industry profitability, poverty, egalitarianism, economy are all issues that affect the longer term expected economic health of the Company and Industry.

The supply and demand for energy and oil are a part of our thinking and a part of our planning process. Unquantifiable considerations enter into most of our strategic planning at the time of the formulation of the strategic guidelines. It is at this time that social issues and trends are most thoroughly tested. The views of top management on these issues are incorporated into the action statements that are issued.

7. What do you believe is innovative in your approach to corporate planning? Which innovations have been successful? What have been less than successful but have presented valuable lessons for your corporate planning process?

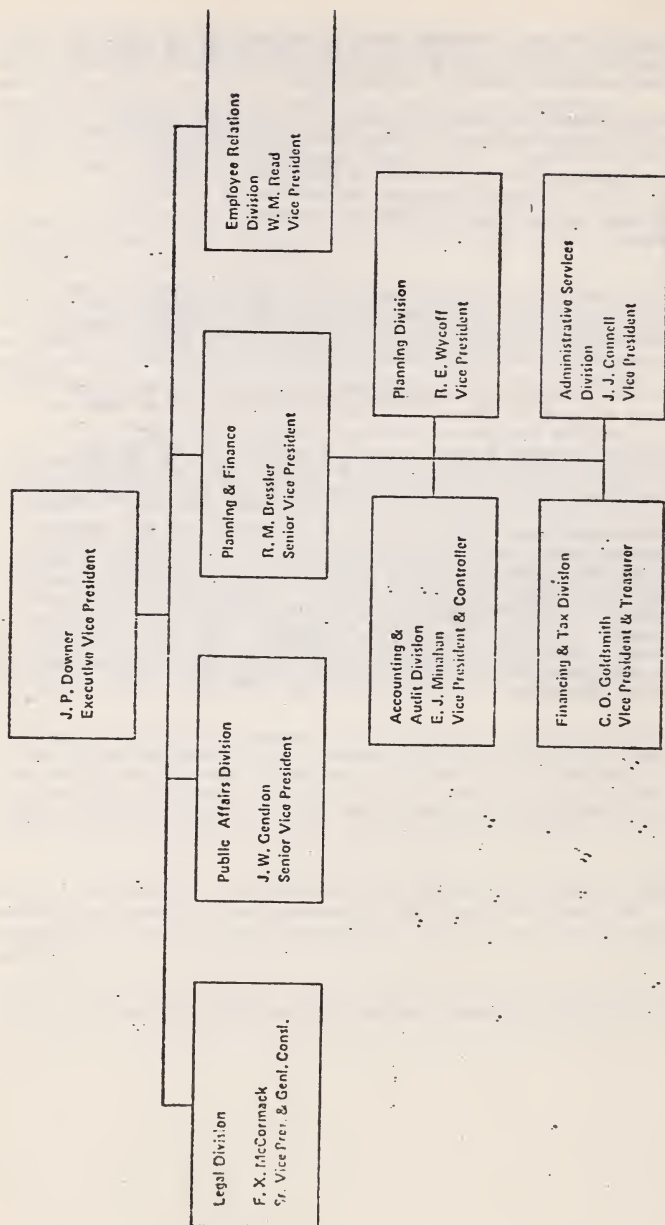
There is little that is particularly innovative to our approach to corporate planning. We do feel that we have taken the best from several

approaches and we have achieved a planning process that is effective for us. It is effective mainly because it provides direct input to the decisions of the Company's top management.

In the last several years we have improved our planning system. Charges that have been successful are those which led to more top management involvement. As to lessons about effectiveness of corporate planning, we believe that top management involvement is critical. Also, failure to consider and provide for a range of environmental possibilities will rapidly discredit the planning credibility.

8. In your judgment, what organizational and procedural aspects of your enterprise's approach to corporate planning might be adapted for application to the Federal Government? What forecasting and planning techniques might be adapted for use in the Federal Government?

If the objective is for the House of Representatives to have a staff unit which attempts to assess the potential long term impact and cost benefit of current legislative actions, we believe some aspects of our corporate planning process might be transferred to the Federal sector. The first step would seem to be to agree on a set of objective criteria against which all legislation would be tested. This may prove to be an insurmountable task unless stated in idealized form. If this could be accomplished, then methods could be decided upon for tracking the probable range of effects of various legislative proposals. We do not, however, think it would be feasible for any centralized planning agency to set binding strategic guidelines for the Congress or Nation. As to methods of forecasting and planning, we would advise the use of all available techniques but be sure to recognize that it is impossible to forecast. The key to successful planning is to have people who can ask the right leveraging questions and earn the attention and respect of the decision makers. No one has the "right answers."



Distribution: AEC, Company-wide

PLANNING DIVISION

November 18, 1974

Subject: Planning Division Reorganization

The Planning Division is being reorganized as shown on the attached reorganization chart, effective November 18, 1974.

The new structure will permit the Division to meet the emerging planning needs of the Corporation in its rapidly changing and expanding environment, and provide a clear delineation of functional responsibilities within the Planning Division.

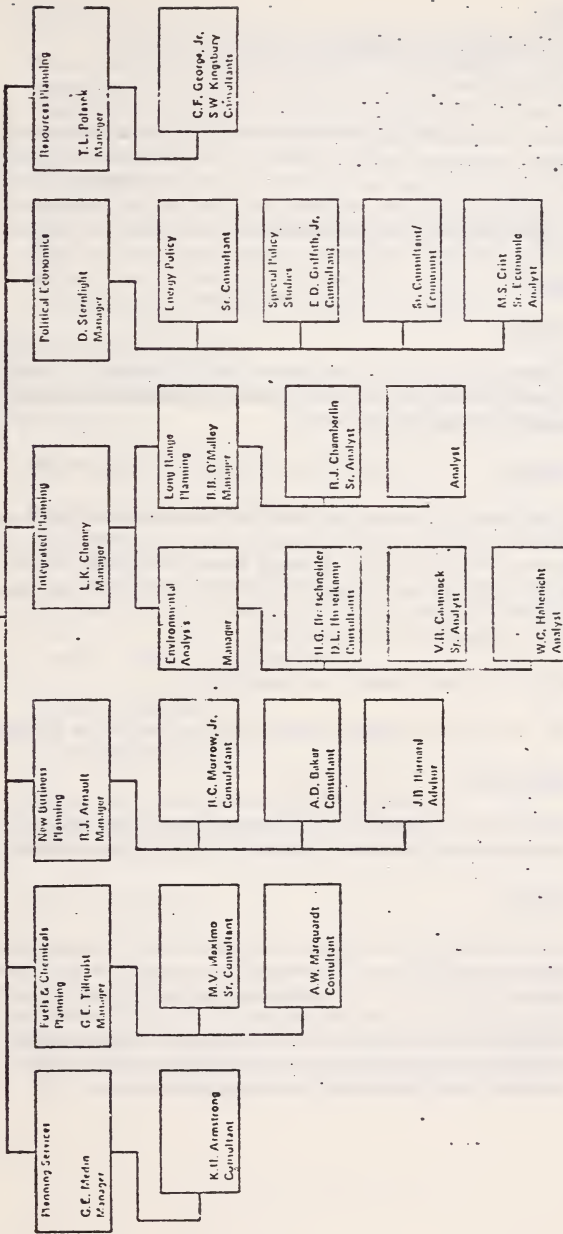
Reporting to me in Los Angeles will be:

- G. E. Medin as Manager, Planning Services. This new unit will have as its primary responsibility many aspects of the formulation of economic data and rationale in support of the Legal Division in major litigations relative to industry structure. In addition, Mr. Medin will continue to provide Company representation in economically oriented committees of the API, NPC and other industry associations. His unit will also provide administrative support and carry out assigned special projects for the Planning Division.
- R. J. Arnault as Manager, New Business Planning. This new unit will have the responsibility for identification, evaluation, and recommendation to the Executive Group of potential new business opportunities outside the normal line of Company business. In addition, this unit will provide a Company-wide resource for the overall evaluation and strategic planning of potential new business activities carried out by the operating divisions. It will participate, and assist other divisions as appropriate, especially Finance, in the analysis and acquisition procedure for any new business.
- L. K. Cheney as Manager, Integrated Planning. This unit will continue to be responsible for the Planning process for Company long-range planning, the framing of strategy issues most relevant to the long-range plan, and critical analysis of the annual integrated plan. In addition, this unit will have the responsibilities formerly performed by the Energy Environment Analysis Group. In this latter capacity it will develop internally consistent environmental assumptions and energy supply/demand scenarios for use by the Division in the LSP and other planning and evaluation activities of the Company. It will also provide price, cost, and volume analysis and forecasting.

- D. Sternlight as Manager, Political Economics. This unit will continue to provide appraisals of domestic and international political-economic patterns and the potential economic consequences of these patterns. As part of this function, it will carry out macro-economic studies and predictions of the U.S. economy. It will act as a professional staff unit to provide political, economic, and energy policy analysis and consultation in support of the development of policies, strategies and environmental assumptions by the Planning Division, Governmental and Public Affairs Division, and other Company units.
- T. L. Polasek as Manager, Resources Planning. This unit will continue to have the responsibility for critical analysis of long-range plans, strategies, priorities, and alternatives and major new technologies of the Company's natural resources operations, working closely with appropriate divisional Planning units.
- G. E. Tillquist as Manager, Fuels and Chemicals Planning. This unit will continue to have the responsibility for critical analysis of long-range plans, strategies, priorities, alternatives and major new technologies of the manufacturing, transportation and marketing aspects of the Company's fuels and chemical operations, working closely with appropriate divisional Planning units.

Robert E. Wycoff
Vice President, Planning Division

Planning Division
R.E. Wycoff
Vice President



XIX. PLANNING

XIX.A. THE INTERNATIONAL DIVISION PLANNING PROCESS1. Purpose

Management's responsibility to define the basic nature, scope and long-term goals, strategies, policies, plans and programs of the Division is manifested in a complex, ongoing decision-making process. The purpose of this chapter is to outline, explain and define the key elements of this process and to formalize the responsibilities required for its functioning.

2. Definitionsa. Planning

The process by which Management sets objectives and attempts to achieve these objectives in the future by identifying and selecting specific actions in the present.

b. Objective

A realistic and observable target which has been selected and defined by Management; a starting point for developing standards of performance for the Division (and/or its parts) over the long run. Objectives are analytically derived through the solution of the following questions:

- (1) Where would we like to be?
- (2) Where will we be if we do nothing?
- (3) Where do we think we can go (at various points in time)?

c. Environment

The external influences on the performance of the Division which stem from the interaction of social, economic, and political forces.

d. Scenario

A documentary device used in communicating the key aspects of a projected environment. Scenarios are designed to show a logical chronology of events and to explore potential causal relationships among events and forces. An environment could be described in minute detail; however, in selecting the events and forces to be described in the scenario, consideration is given to utility (impact on ARCO) and practicality (ability to make reasonable forecasts).

c. Strategy

A management decision or a series of management decisions representing the most practical way to achieve objectives. Strategies can include policies, programs, procedures or practices which produce significant and enduring effects.

f. The Plan

The documentation of the current objectives and strategies of the Division, the environmental assumptions used to develop them, and a projection of financial and operating indicators showing the expected results of implementing the espoused strategies.

3. Components of the Process

The Planning Process is composed of the following sequence of decisions and activities:

- Establish Company Policy and Guidelines
- Establish Division Roles
- Identify Objectives and Issues
- Perform Environmental Analysis and Develop a Scenario
- Assess Company Capability
- Reshape Objectives
- Develop Strategies
- Make Financial and Operating Projections
- Present Recommendations to Executive Management
- Secure Approval
- Implement the Plan

a. Establish Policy and Guidelines

This is largely a Corporate activity which results in a set of decisions intended to establish the basic nature of the Company's activity. Typical issues dealt with at this level include:

- (1) Major operating decisions (such as the balancing of refining and production capacity) and establishing relationships between major operating components.
- (2) Selecting major diversification channels.
- (3) Establishing investment criteria and levels of financial commitment to each segment of the business.

b. Establish Division Role

Company policies and guidelines are subsequently refined to identify the specific part to be played by each division, i.e., the Division Charter. The decisions at this stage are still largely at the Corporate level; however, the Divisions are in a position to influence.

c. Identify Objectives and Issues

Once the Division Charter is established, the Division adds the appropriate details to arrive at specific objectives. Also, special problems associated with the execution of the Charter are identified and together with the objectives become the focal point or unifying medium for subsequent planning activities.

d. Perform Environmental Analysis and Develop a Scenario

Having established basic objectives, the next stage of activity is aimed at gaining an understanding of the external influences affecting our ability to perform and affecting the way in which we should pursue our objectives.

e. Assess Company Capability

Internal Company factors have as much impact on the selection of strategies and on the evaluation process as the external forces. Therefore, before proceeding further in the planning process, it is necessary to make a thorough evaluation of the Company's strengths and weaknesses, present and projected. This results in getting maximum use out of strengths and developing strategies aimed at the acquisition of resources or finding ways of doing without them.

f. Reshape Objectives

After having appraised the external and internal forces affecting the Company's activity which is under review, objectives are reappraised and made realistic (obtainable).

g. Develop Strategies

Taking together the insights from the environmental study and the appraisal of Company capability, strategies are developed as the best ways to achieve objectives.

h. Make a Financial and Operating Projection

A financial and operating projection is made in order to quantitatively evaluate the proposed action, and to provide the basis for reshaping and/or optimizing strategy choices.

i. Present Recommendations to Executive Management

Once the best strategy alternatives are chosen, the Division presents its proposal(s) to Management. A typical example of this is the annual LRP presentation made to the Executive Committee. This presentation is a comprehensive review of the Division's Plan; however, individual components of the plan are frequently reviewed with Executive Management as needs dictate. On such occasions, new strategies can be developed or changes in the environmental outlook can become accepted.

j. Secure Approval

This step often involves a process of alteration, exchange and further review by Corporate Staff before a decision to approve is secured. Any monetary commitments involved are still subject to the AFE process (See Chapter III) before they can be implemented.

k. Implement the Plan

The Division is then charged with executing the approved plan and is held accountable for it.

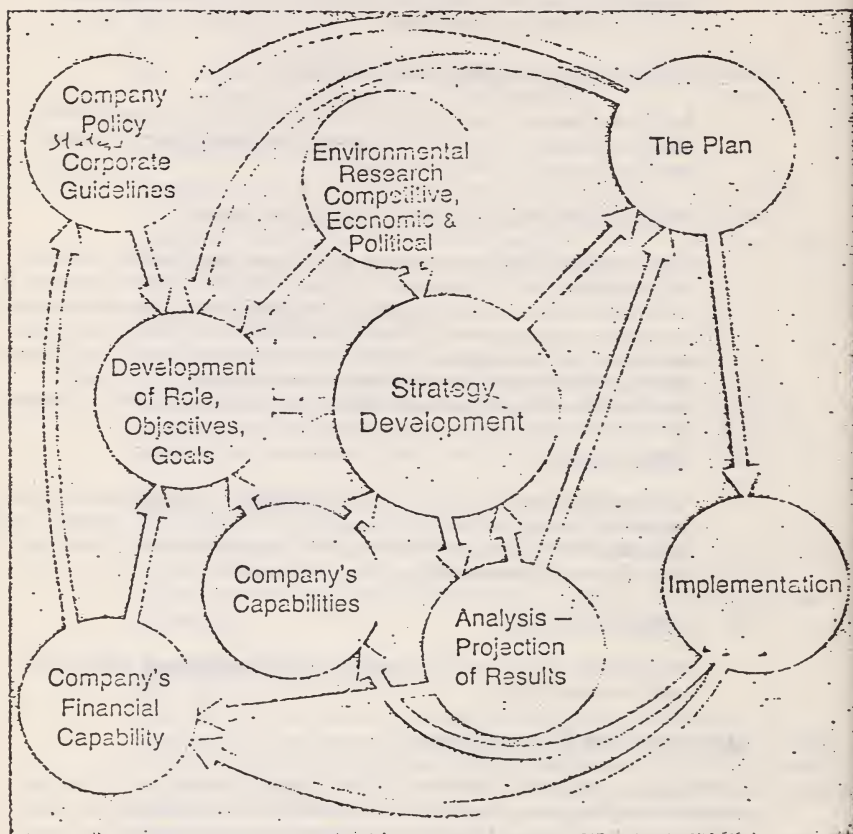
4. Dynamics of the Planning Process

All the aforementioned components of the Planning Process are active concurrently and many are interrelated. Page NEN.A-5 represents the reality of the planning process. This portrayal reveals the need to continuously keep all planning activities current and to consider the state of knowledge in all components of the planning process simultaneously in the decisions of a single component.

5. Responsibilities

International Division Management has the responsibility to plan:

- Select objectives
- Review and endorse environmental projections



- Assess Division capabilities
- Select strategies
- Make presentations to Executive Management

International Planning has the responsibility (although it will have to call upon other Division units at times) to provide technical and analytical support to Division Management, and in carrying this out:

- Performs political, economic and competitive research
- Investigates and analyzes alternative actions/strategies
- Solicits and reviews opportunities from operating components and independently develops alternative opportunities
- Brings pertinent issues to Management's attention
- Recommends action to Management
- Coordinates activities of all involved parties
- Compiles, documents and maintains the plan

6. Other Guidelines and Requirements

Additional requirements and guidelines needed for the functioning of the Planning Process are outlined in subsequent sections of this Chapter and in Chapter XVII (Data Requirements).

Section XIX. B describes the Planning System adopted by the Finance Control and Planning Department as the means by which it executes its responsibility to provide technical support and coordination for the Division's Planning Process. Inter-relationships between the various FCP units and how they interface with other Division processes are explained in this section.

Section XIX. C contains approved procedures which explain the operation of specific parts of the Planning Process and the FCP Planning System.

Section XIX. D contains reference guides which provide recommended approaches to specific Planning problems for the use of all those involved in the Planning Process.

The data requirements for the annual Long Range Plan are contained in Chapter XVII and all bear the designator AP.

The Bendix Corporation
Executive Offices
Bendix Center
Southfield, Michigan 48076

Jerome Jacobson
Senior Vice President

✓The Honorable Robert L. Leggett
The Honorable George E. Brown, Jr.
U.S. House of Representatives
Washington, D.C. 20515

December 1, 1975

Dear Mr. Leggett and Mr. Brown:

I am replying to your letter to Mr. W. M. Blumenthal, dated October 30, 1975, dealing with legislation to improve long-term Federal policy planning. I have undertaken this reply as I am the Corporate Officer in charge of planning for Bendix.

Attached you will find a brief comment on the eight questions listed in the attachment to your letter.

If invited, I would be pleased to participate in the one-day seminar. Inasmuch as I will have to do some traveling internationally in December, it may be that I would not be available on the chosen date.

Thank you again for your letter. I do hope that the reply serves your purposes.

Sincerely,

Attachment

12/1/75
Jerome Jacobson
The Bendix Corporation

Responses and Comments Regarding
Legislation to Improve Long-term Federal Policy Planning

1. Plans -- both short-run and long-run -- are basic to Bendix' operations. They are principal management tools. Without them, management would be denied the means of controlling the corporation's future. With them, the corporation believes it is equipped to anticipate events, seize opportunities, guard against surprises, and control its destiny rather than permitting events to shunt it about.

The nature of our businesses strongly suggests the need for plans.

 - . The Aerospace/Electronics Group deals in high science products and services that are years in development with long lives thereafter. The arts with which they deal are oftentimes arcane. Our failure to anticipate and handle new technologies and to anticipate future needs in satellites, aircraft, communications, and navigation would be deadly for our business.
 - . The Industrial Group is dominated by costly and sophisticated machine tools and instruments for their automatic control. Failure to anticipate industry's needs and to upgrade technology would, again, be near fatal. In this highly cyclical business, planning to anticipate the phases of the business cycle is imperative.
 - . Energy Group. We engage in seismic exploration for petroleum, provide heavy equipment for off-shore rigs and pipe-laying barges, and produce piping required for nuclear and fossil fuel power plants and the refinery industry. We plan so as to anticipate the needs of the industries we serve. It is a monumental understatement to note that our government failed years back to develop plans to meet the nation's rising energy needs.

. Shelter. We fell trees and produce lumber and other hard-fibre based products for the construction industry. We also produce mobile homes. Timber is a scarce resource and housing is sorely needed. We must plan now to assure our raw material supply and to expand our facilities to meet rising housing needs. Government actions weigh heavily on the housing industry. Our planning turns, in part, on our effort to anticipate what the government will do regarding its forest resources, environmental controls, and the aids it will give to the housing industry. The sad absence of credible government plans is a problem to us and others in the industry.

. Automotive. Bendix is the world's largest independent producer of automotive parts. About one-half of our production is in the U.S. and the other half abroad. It would be folly for Bendix to want for a view of the future of the industry in the U.S., in Europe, in Japan, and importantly, in the developing countries abroad. The confusion reigning in the U.S. and other developed countries regarding safety and environmental controls complicates -- to put it mildly -- our planning.

. International. These activities account for about one-fourth of our sales and a higher proportion of our income. It is almost superfluous to state that we must plan in order to handle problems of changing political systems abroad, changing attitudes towards multi-national corporations, floating exchange rates, and other vexing, complex problems.

2. Long Range Planning is the responsibility of a Senior Vice President who reports to the most senior official of the company. The corporation has gained considerable advantage from the company's receiving at the highest level the views of its planners and the planners, in turn, receiving guidance from the corporation's highest level.

The planners are the link between line divisions and senior management. Line management receives overall corporate guidelines developed by the planners and issued over the signature of the Chief Executive. Line management then drafts its plans; they are screened and critiqued by the planners for the Chief Executive Office. Face to-face reviews are then conducted by the Chief Executive with senior line management. Three review sessions are held annually. A limited number of critical issues are identified in the first review and then are developed in detail and discussed intensively in the succeeding reviews. At the year's end, the central planning group writes the comprehensive corporate plan which then becomes the official corporate guidance document.

Guidance is the key word. The plans are not rigid and detailed instructions. Rather, they constitute a description of directions in which line divisions are permitted to move. The plans are supplemented during the year by capital outlay reviews and by other disciplines such as reviews of major marketing and investment decisions. Annual financial plans must respond to the long-term guidelines.

3. Five years is the span of the long-range plan. It is sufficiently long to permit major new directions to be pursued but not so far out as to suggest spurious realism. An interim period of three years receives intense attention. Overall annual financial plans -- the yearly operating guidelines -- must fit within the five year plans. Each year, the five year plan is rolled over and details within it are subject to review at any time that circumstances dictate. A check on the realism of plans is maintained by periodic tracking of key matters.

4. and 5. Planning methods vary. Overall technical, economic, and political guidelines are established. Each business group then employs the planning technique suited to its business. Cyclical and secular analyses, alternate scenarios, and model building exercises are used but their importance is not overestimated by us. Intimate contacts with the industries we serve lead us to inject a strong element of subjective judgment into our plans. Our short-range plans contain a best-case and worst-case analysis and our long-range plans provide for "what-if" alternatives. Close tracking of developments and swift adjustment to change are our best defenses against surprise.
6. Subjective and quantitative judgments about the political and social environment, economic trends, defense considerations, and developments abroad enter heavily into our plans. We draw on knowledgeable outside experts not so much for their forecasting skills but more for their insights and their judgments.
7. We do not believe we are innovative. At best, we hope to be reasonably Delphic through the combination of technical and subjective judgments that we employ. Strong internal communications and close sensitivity and reading of external developments are our greatest strengths.
8. There is no one form of planning organization that we believe will best serve our national needs. But there are several aspects of our planning organization that we believe will be useful in national planning.
 - . First, we need national planning and we do not now have it. It is a sad commentary that this nation with its skills, capital, rich raw materials base, and underemployed resources should fail to have anticipated and managed problems in energy, the environment, housing, mass transportation, the aged and ill, and so many others. The separate

planning activities of government agencies do not add up to a national plan. And the Executive and Congressional branches cannot bring harmony into their views on a national plan because there is none to address.

- . Second, in Bendix we take steps to assure that critical issues are tracked and not addressed piecemeal or in unrelated fashion. There is an urgent national need for like steps. Our nation lacks the means of monitoring our progress in vital areas because we lack benchmarks -- goals, means of getting there, telltales of success or failure. Corporations which lack such means stumble in their affairs. Our government cannot afford to stumble. It requires a process -- as Bendix has one -- for defining where it is, where it wants to be, whether it is on the way, and corrections in course are called for.
- . Finally, there are many parts to Bendix -- five main business groups and a far-flung international operation -- each with a constituency which tends to go its way. Through planning, they hold together. There is a like need at the national level. Ideally, there should exist a plan representing the joined views of the Executive and Congressional branches of government and of the state and local jurisdictions that are close to our citizens. These plans should become a point of action and discussion for the Executive and Congressional branches of government and for debate by the citizenry.

There are no methods that we would recommend above others for national planning. The techniques are many, each with its own strength and weakness. Finding the right technique is a need secondary to a sense of dedication to creating

national plans. The debate surrounding the Humphrey-Javits bill itself displays the strongly-held difference of views on what is meant by a plan. Please note that we have not joined that issue in this reply but rather have confined our comments to the questions raised in the attachment to your letter of October 30, 1975.



THE DOW CHEMICAL COMPANY

BENNETT BUILDING
2030 DOW CENTER
MIDLAND, MICHIGAN 48640

December 3, 1975

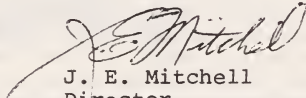
Mr. James Spensley
Counsel to the Subcommittee
on Fisheries and Wildlife
Conservation and Environment
U. S. House of Representatives
Room 1334, Longworth House Office Building
Washington, D. C. 20515

Dear Mr. Spensley:

In Mr. Lyon's letter of November 6 we promised you a written statement describing planning methods in Dow along with suggestions for applying our experience to Federal planning.

A copy of this statement is attached.

Sincerely,



J. E. Mitchell
Director
Corporate Planning

bpm

Attachment

DESCRIPTION OF PLANNING SYSTEM
USED BY THE DOW CHEMICAL COMPANY

ORGANIZATION

The Dow Chemical Company is decentralized on a geographical basis with Operations delegated to the separate managements of Dow USA, Dow Europe (including Africa and the Mideast), Dow Canada, Dow Latin America and Dow Pacific. A small Corporate Group includes Executive Management, Financial, Product Management, Corporate Planning, Employee Relations, and Legal. There are no Corporate heads of Marketing or Manufacturing. Technology, Safety and Loss Prevention, and Ecological matters are important parts of Executive Management. All Corporate activities, including Planning, are linked closely to the President who is Chief Executive Officer.

Any planning approach must be designed for its specific organization and environment. Dow methods are based on having a small, central management group living in a small city of 40,000, knowing each other very well personally, very small turnover to or from other companies, but broadly experienced geographically, functionally, and in various product lines. Fourteen of the seventeen members of the Dow Board of Directors are in active Dow management. Two of the remaining members were formerly Dow officers.

The excellent communications made possible by location and management policy allow unique approaches to Corporate Planning which would probably not be generally applicable to other organizations.

PHILOSOPHY

Planning Activities in a corporation should be carried on for the purpose of setting needed goals and encouraging action to carry them out. Planning which is not focused and which produces only "nice-to-know" information is of little value. From an overall corporate standpoint we must focus on only a few major factors. We must constantly fight to maintain flexibility, since comprehensive systems create rigidity. Whenever there is a choice between promoting flexibility and adding additional detail we would opt for flexibility.

PLANNING ACTIVITIES

Corporate Planning

- ___ Definition of Global Product Strategies (7 Years)
- ___ Developing and monitoring Capital Plans (5 Years)
- ___ Forecasting Sales and Profits (3 Years)
- ___ Exploratory Planning (25 Years)

These activities are relatively continuous--revised as necessary but routinely every 3 months. These time frames were developed through experience.

Product Strategies are developed with Area Business Managers and are the product of many recycles. Highly judgmental, based on solid analytical work and experienced management (15 years minimum). Much superior to mechanical, computerized approaches.

Capital Plans follow product/geographical strategies within the limitation of capital and manpower availability. Computerized integration of projects into spending schedules is employed.

Forecasting Sales and Profits is done by a panel of experts having varying inputs and expertise. Generally of adequate accuracy except for boom of 1974 and drop of 1975.

Exploratory Planning is done intermittently as needs develop. Present emphasis is on changing social/political pressures, long-term energy supplies, and the proper role of the multi-national company.

New break-throughs in science are constantly under evaluation.

Corporate Controller

Development, through the geographical Areas, of the yearly Profit Plan. This is a traditional forecast/budget which is a "bottom-up" commitment to the next year's goals on Sales and Profits.

Operational Planning

Each Geographical Area is free to develop the methods which best serve its purposes. Organization varies, but the normal functional departments of Marketing, Manufacturing, R & D, Controller, Product Planning and Pricing each have continuing major inputs.

The time frame varies from one to five years ordinarily with a longer planning period necessary for energy and major projects.

Generally we use all of the accepted techniques: contingency planning, best and worst case scenarios, and a computerized planning model of the company which can be used to test various possibilities. Obviously, good planning means prevention of disaster, organizing for quick response to ANYTHING and optimizing progress toward concise goals over both the long and short term.

GENERALSUGGESTIONS FOR APPLYING DOW PLANNING EXPERIENCE
TO THE FEDERAL GOVERNMENT

1. A mechanism is badly needed to produce clear-cut goals for the U.S.A. However, this mechanism must be backed (and used) by a strong commitment from the President, his cabinet and congressional leaders or it will add nothing but confusion and negative results.
2. The planning agency must avoid the temptation to audit results. Concise, consistent, objective national goals will be welcomed by most citizens. Additional checks and restrictions are unneeded and would defeat the important function of setting realistic goals.
3. Concern over techniques must not divert effort away from the primary purpose.
4. The planning process must be a continuous effort. It must be responsive and flexible. The "five year plan" just does not work.
5. The Planning Agency must be staffed with experienced people who are allowed to become really professional. In industry Corporate Planners require at least fifteen years in various parts of the business. Line experience is invaluable. The Federal need can accept nothing less. Staffing with political activists and recent systems graduates would guarantee failure.

GENERAL MILLS, INC. • EXECUTIVE OFFICES • 9200 Wayzata Boulevard • Minneapolis, Minnesota 55440

VERNE C. JOHNSON
Vice President
Director of Corporate Planning

December 5, 1975

Robert L. Leggett, Chairman
George E. Brown, Jr., Chairman
U.S. House of Representatives
Committee on Merchant Marine
and Fisheries
Room 1334
Longworth House Office Building
Washington, D.C. 20515

Dear Sirs:

Your request for assistance in the study for anticipatory, long-term planning in the Federal Government, involves issues which are exceedingly complex and which require far more detailed discussion than can be developed in a concise written statement. For this reason I shall discuss only briefly in this letter the responses to your questions. If you find these somewhat sketchy views to be of value in your deliberations, I would hope that I might be afforded an opportunity to amplify on them orally and to respond to your questions.

My written response to your questions is divided into two separate written segments. Answers to your questions asking about the specifics of our planning process and how it works, which primarily requires information and factual answers, are contained in a separate memorandum and attachments which are enclosed with this letter.

The scope of this letter will be limited to a discussion of the basic concepts or fundamental principles which underlie the strategic planning process at General Mills and how these concepts relate to strategic planning by the Federal Government. It is these concepts which, in our opinion, have made strategic planning at General Mills well accepted internally and utilized as an integral part of the corporation's decision process. Understanding and effectuating these concepts is central to an effective strategic planning process and is far more important than specific innovations which might be introduced.

Page Two
December 5, 1975

Before getting into the substantive issues, let me make it crystal clear that the views expressed in this letter are my own personal views and in no way are intended to reflect corporate viewpoints on the part of General Mills or any of its officers. On an issue such as whether and how the Federal Government should plan strategically there is unlikely to be any greater consensus viewpoint than you will find among members of Congress.

First, a few introductory words about General Mills, its diversity and its approach to organizational structure and strategic planning. General Mills is a comparatively large growth oriented corporation which has been diversifying over the past ten years into quite a number of major new business segments. The corporation has approximately 40 independent business operations, each competing in different competitive environments. These business operations report to 12 groups which in turn report to 4 Executive Vice Presidents. We call these our Operating Units and Officers. These operations report through the 4 Executive Vice Presidents, to our Corporate President and Chief Operating Officer. About 50% of our sales are food products sold through the supermarket. The other half of our sales are in very different types of businesses including such areas as restaurants, fashion, crafts, games and toys, furniture, direct marketing, specialty chemicals, and travel. Our management approach, because of this diversity of business segments, is based on the concept of decentralization and our organizational structure and strategic planning process accordingly reflect and support this underlying concept.

I'd like to outline briefly those aspects of our strategic planning process which we regard as fundamental to its effectiveness. These include:

- (1) General Mills' commitment to a decentralized approach to management, and a planning system patterned on this concept of management. Corporate management sets the basic corporate policies and objectives and establishes charters and general criteria to guide its operational units. Within these charters and general criteria corporate management insists that the initiatives be with the operational units which are responsible for implementation of the objectives and strategies. The corporate posture, therefore, is one of review and response to objectives and strategies developed by these operational units, not one of developing a "grand corporate plan" or prescribing the specific objectives and strategies for each operational unit. It is one of setting broad policies and objectives and allowing wide latitude in

Page Three
December 5, 1975

establishing specific strategies to attain these objectives. This posture, I am convinced, best promotes creative thinking, innovation, cost effectiveness, and best assures the ultimate objective of consumer satisfaction. This corporate posture can best be described as one of "orchestrating off imbalances."

- (2) Full involvement in the planning process by top decision makers, both at the corporate and operating levels, with a relatively low degree of planning being done by professional planners. It is imperative that the decision makers, at all levels, be fully involved in the planning process. Any planning process which principally involves professional planning staff rather than the decision makers is essentially irrelevant and ineffective. The primary role of the planning staff is to service planning by the decision makers, not to undertake planning. This is a fundamental distinction, often overlooked in developing a strategic planning process. Words which best describe the role of professional planners include process oriented, catalytic, coordinating, focusing, providing analytical inputs, and developing longer term forecasts.
- (3) Performing planning on a continuing basis, annually updating and reassessing - not a plan set in concrete for a fixed period of years. Changes are continually occurring and the fundamental purpose of strategic planning is to keep current management's best assessment of its situation over the next several years. As long as the direction and momentum are consistent with established policies and basic objectives, it serves no useful purpose to engage in precise multi-year budgeting or programming.
- (4) Comprising the Corporate Planning Review Group of those few top officers having general or overall responsibility for corporate performance - not officials with operating responsibilities or specialist corporate department heads. Those responsible for the overall performance of the corporation must be the participants. Those who have operating responsibilities or those who are corporate staff specialists cannot perform this role. They will inevitably make the strategic plan the sum of all parts without critical review and without shaping the parts into a balanced corporate strategy.

Page Four
December 5, 1975

- (5) Achieving meaningful personal interface between the Corporate Planning Review Officers and those proposing operational plans. This type of interface is of critical importance. Operations submit their written plans, which are read by the Corporate Review Group prior to the oral session. The oral sessions, then, are very informal, candid, and keyed to discussing priority areas of strategic concern or opportunity with emphasis on what has changed significantly from a year ago.
- (6) Concentrating the planning focus on a limited number of strategic issues which have significant impact. Attempting a detailed assessment of all issues which might be relevant to corporate performance is much too costly, and time consuming for top executives. More important, this type of proliferation prevents proper concentration and decisions on those issues which are of critical importance.
- (7) Keeping the planning process sufficiently simple and practical to maintain the understanding and full involvement of the decision makers. This means ruthlessly limiting the inevitable professional planning staff attempts to become overly academic or unduly complex. Examples are (a) the eminently logical but unrealistic encouragement of such things as the arraying of many alternative strategies which were discarded in selecting the preferred strategy and (b) the establishment of highly sophisticated but overly complicated computer based modeling endeavors, the assumptions for which are neither understood nor participated in by the decision makers. We must always keep clear the fundamental purpose of strategic planning. It is to provide understanding and agreement on basic objectives and strategies, not detailed strategies. It is to achieve a relative degree of comfort or discomfort between corporate and operational management and their proposed plans. It is to assess issues such as (a) whether the corporation's direction and pace is adequate, (b) whether responsibility is assigned at the proper strategic level, (c) to isolate and address the major areas of longer term concern or opportunity and (d) to provide the foundation on which short term programming (budgeting) can be determined.
- (8) Making judicious but increasing use of "what if assumption planning." With the degree of volatility and uncertainty in the external environment currently, something that is likely to continue in the future, it is imperative that corporations be able to anticipate and respond promptly to events which are different than those assumed in the basic strategic plan. This can be done, within the planning process, by testing alternative assumptions.

Page Five
December 5, 1975

These tests should involve issues of significant impact only and must be kept simple and within the understanding and concurrence of the decision makers. These tests, more often than not, do not require complex computer model exercises which are quite expensive and which frequently cannot be justified from a cost-benefit standpoint.

- (9) Understanding clearly that the written plan, while an indispensable part of strategic planning, is far less important than the benefits which accrue from the discipline of an effective planning process itself. The primary objective of a planning process, contrary to a commonly held belief, is not to develop a comprehensive corporate plan. A properly structured planning process provides the necessary discipline under which the concepts discussed in numbers 1 through 8 above are forced to take place. It is these various involvements and interfaces which occur during the planning process that are crucial to strengthening strategic thinking, adequate understanding and upward communication. The planning process we have at General Mills, though far from perfect, does accomplish these important objectives.

The above nine fundamental concepts, which because of space limitations have only been touched on briefly, place stress on what should not be done as much as what should be done. This is intentional since my personal experience tells me that ineffective planning processes invariably result from the violation of these fundamental planning concepts. The least successful innovations in planning, I have found, generally involve attempts by professional planners to develop far too much precision too far into the future. Staff developed comprehensive plans or blueprints usually impede rather than enhance effective strategic planning. The type of planning which violates these concepts almost always results in corporate management disappointment, disillusionment with the planning process and replacement of the professional planning staff.

Let me now discuss, much more briefly than is adequate for this complex issue, the relevance of these corporate planning concepts to strategic planning by the Federal Government.

Permit me first to explain that my conclusions have not been reached without having the benefit of reasonably extensive involvement in the public sector. I have, for example, spent more years of involvement with public sector strategic issues than those in the private sector. This public sector involvement has included service as a member of the Minnesota State Legislature, serving as Administrative Assistant to a Congressman

Page Six
December 5, 1975

in Washington, ten years as the Executive Director of a Civic Organization which devoted its entire efforts to improving the functioning of government at the local and metropolitan level, and continuing participation during the past nine years on these public sector issues on a volunteer basis.

Two fundamental assumptions underlie what I shall discuss and propose in the following paragraphs. Under different assumptions my proposals would be inappropriate. These underlying assumptions are:

- (1) The basic concept of separation of powers between the Executive and Legislative branch of the government, which is embeded in our whole system, is sound and any strategic planning process should be consistent with this concept.
- (2) There should be no further erosion of this concept by establishing the strategic planning process independent from the Executive branch of the government.

I believe that each and every business planning concept which I have discussed in this letter applies equally to planning by the Federal Government. In reaching this conclusion, I am not unmindful of two very basic differences between the environment of a business corporation and that of the Federal Government. The private for profit corporation has a single and simple unifying objective, which is profitability or what we generally call "the bottom line." No such simple quantifiable objective can be used in public sector planning. Second, a discipline exists in the private for profit corporation reinforced by the ability of the Chief Executive Officer to compel compliance, at least within the internal corporate decision process. In the public sector the separation of powers concept allows no such easy implementation. Both of these differences are important and clearly will make public sector strategic planning far more difficult. But they present no insuperable barriers to effective utilization of the planning concepts which I have described and which I am suggesting are equally applicable to strategic planning by the Federal Government.

Let me proceed to explain specifically why I believe this to be true and how these concepts ought to be applied by the Federal Government.

- (1) The Federal Government should be committed to a decentralized approach to management, with a planning system patterned on this concept of management. The diverse business segments in which General Mills competes as well as its internal organizational structure and relationships is not unlike that of the Federal Government. The Federal

Page Seven
December 5, 1975

? || Cabinet departments have responsibilities and roles not dissimilar to the operations and the specialist corporate staff departments in our business. The responsibilities given to state and local governments under the Federal grant programs can be likened to the group structure and the individual operating units at General Mills. Therefore, in my opinion, the fundamental principles of decentralized management are as applicable to the Federal Government as they are to our corporation. This complex environment simply cannot be run from the top. Initiatives and innovation must occur at the level where policy responsibility is to be implemented. Accordingly, the planning processes should support this decentralized concept. The planning system should provide for the development of strategic plans by units such as the state and local government as well as by Cabinet departments. These plans should then be reviewed and responded to. Innovation and differing approaches should be incited unless the proposed approach is clearly inconsistent with achieving the Federal policy objectives. Bureaucratic and detailed rules and operational intervention should be held to an absolute minimum. The general approach of Federal Strategic Planning should be one of review and response to plans initiated and developed by those who must implement Federal policies with broad latitude to use varying strategies as long as they are consistent with the implementation and accomplishment of the general policies and objectives.

- (2) There should be full involvement in the planning process by governmental policy officials, at all levels, with a relatively low degree of planning being done by professional planners. Just as it is imperative that the top decision makers at General Mills be involved deeply in the strategic planning process, the same must be the case in Federal Strategic Planning. The planning responsibility, accordingly, must be in the White House. Further, the participation within the White House must be by those who have generalist or overall responsibilities. Although the OMB would appear to be a logical focus for Federal Government Planning, I do not favor it, since it is seldom effective to combine long range planning in the same organizational entity which has responsibility for short term decisions. It would be preferable to place planning responsibility in the domestic council, probably using the Vice President as the chief planning official. However, the domestic council, as now constituted, is not appropriate for effective strategic planning. Cabinet officials, who now comprise the membership of the domestic council, are specialists in their responsibilities, not generalists, and are subject to the same criticism I raised with respect to corporate

Page Eight
December 5, 1975

specialist staff officers at General Mills. The domestic council, for strategic planning purposes, must be comprised of generalist public officials who are a part of the Office of The President and supplemented by members, appointed by the President, who have no other governmental responsibilities.

A newly elected President obviously will appoint new members to the domestic council which in turn is likely to produce changes in the strategic or policy plan. This is not dissimilar to what often occurs in a business corporation under a new Chief Executive Officer. Congress can impact on the policy plan and, by resolution, can evidence its dissent to certain policies and its unwillingness to pass legislation to implement them. In making this proposal, let me re-emphasize that consistent with the traditional concept of separation of powers, my purpose is to strengthen strategic planning within the Executive branch of government rather than to establish an independent planning agency or one which involves both the Executive and Legislative branches.

The role of the professional planner within the Federal Government should be kept under careful control. The professional staff should have the primary objective of getting the decision makers in the Federal Government to plan, rather than to themselves engage extensively in staff planning. The role outlined earlier in this letter for the professional planner at General Mills should be similar within the Federal Government.

- (3) Federal planning should be performed on a continuing basis, annually updating and reassessing - not a plan set in concrete for a fixed period of years. Planning by the Federal Government ought to be thought of as a continuing process, involving updating and reassessing regularly. Comprehensive five year plans with fixed dates, such as are common in non-democratic nations are neither useful nor appropriate in the United States. Equally important, the process should be an evolving one. Concentration, at least initially, should be concerned with determining what are the likely longer term consequences of a continuation of present policies and trends. If either the direction or the implications are considered to be inconsistent with what is desired, then the strategic planning should be directed to ways which it can best alter this course. In other words, Federal planning should start from what is and what, as a practical matter, is likely to be, not from dreams of what should be.

Page Nine
December 5, 1975

- (4) Achieve meaningful personal interface between the Federal policy makers who comprise the planning review group with those assigned the responsibility for proposing operational plans. Informal face-to-face review sessions, following familiarization with the written plans, is an essential part of any Federal planning process. This process assures a discipline. The quality of the plans can be assessed since those who propose them must be prepared to explain and defend them. It provides a needed forum for the exchange of views, as a means of gaining understanding and interpretation and as a means of aiding the Federal Review Group in becoming relatively comfortable or uncomfortable about the reasonableness of the substantive conclusions. This type of interface, most importantly, provides insight on issues which have broader implications than the purview of any single area of planning responsibility.
- (5) Federal Strategic Planning must be concentrated on a limited number of strategic issues, each of which has significant impact. At least in the early stages of an evolutionary Federal Government Planning Process primary emphasis should be placed on agreeing on which areas are to be given priority. The number of areas can be expanded as the process matures. Otherwise the process will be far too complex and too fragmented for an effective effort.
- (6) Keep the planning process simple and practical in order to maintain the understanding and involvement of the decision makers. Although some of the functional plans obviously must extend beyond five years it makes a lot of sense to keep the overall Federal planning to a limited period such as five years. This allows concentration on issues which extend well beyond the immediate year at hand, while at the same time keeping the planning focus within the practical horizon of elected policy leaders. A five year planning effort reasonably well done would be a giant step forward and should be given priority over a longer time frame. Once five year planning can be accomplished effectively, it can be extended as a logical evolutionary step.
- (7) Make judicious use of "what if assumption planning." This type of alternative assumption planning can provide the same type of insights which we find valuable at General Mills. Care should be exercised to limit these "what if" assumptions to areas which are significant and to assure that they become no more complex than is absolutely necessary.

Page Ten
December 5, 1975

- (8) Understand clearly that development of the written Federal Strategic Plan, although essential, is far less important than the benefits which accrue from the discipline of the planning process itself. The involvement, the interfaces, the understandings, the communications, and so forth, which are compelled by an effective strategic planning process provide the most important benefits. The strategic plan serves as a recording or a compilation of the understandings which have been developed through this process of involvement.

Let me close by emphasizing several areas of deep concern in any move to formalize Federal Government Strategic Planning. These concerns are sufficiently important, in my opinion, as to make me quite apprehensive about how formalized Federal Strategic Planning might actually develop. These concerns include:

- (1) Most of the benefits of Federal Strategic Planning, under the suggested concepts I have proposed, can be obtained without formal congressional action. There is nothing to prevent the President from establishing a formal planning process of the type which we undertake at General Mills. Congress, by performing its own analysis, by asking the right questions when reviewing the President's proposals, and by insisting on needed longer term information can assure itself that effective Executive branch strategic planning is actually being performed.
- (2) It is imperative that noncareer public servants, supplemented by individuals who have no other governmental responsibilities, play the key policy roles in the strategic planning process. My own personal experience with career public servants leads me to be cautious in encouraging formal strategic planning by career public servants without adequate safeguards. Many of these career public servants, by their decision to select government service rather than private sector employment, reflect their lack of confidence in the competitive enterprise system under which people manifest their preferences through market decision within general policies established and enforced by the government. Career public servants, more often than not seem inevitably to want to manage or control in detail these decisions through intervention by the public sector. This degree of overmanagement by the public sector, in my judgement, is inconsistent with the desires of the vast majority of private citizens.
- (3) Once policy or strategic planning, on a formalized basis, is effectuated within the Federal Government there is likely to be a natural tendency to develop plans in a precise and determining sense. A compulsion to manage and control private sector decisions rather than to find ways to incent

Page Eleven
December 5, 1975

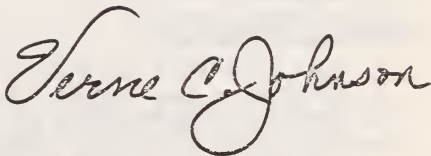
or disincant those which are inconsistent with sound public policy planning is not unlikely. Federal policies, on the contrary, should be directional and general and should exert the least amount of specific management intervention which is consistent with implementation of the general policies. The proposed legislation which I have seen manifests some of these tendencies.

- (4) My experience has led me to believe that public sector planning invariably places primary emphasis on the establishment of professional standards as the means of measuring effective performance. With each passing year I am more than ever convinced that, though it is imperfect and imprecise, the best measure of effectiveness results by giving the user of services alternative choices of providers of these services. When public services are provided solely by public servants no such visible alternative choice is possible. The standard of measure, therefore, can only be through the means of professional standards. Visible competitive alternatives incite innovation and allow market preferences to be manifested. The provider that is preferred by the consumer of these services evidences growth which in turn incites the alternate provider who is not preferred to become more competitive. This, in most cases, is a preferable test of effectiveness and responsiveness than can be obtained through the utilization of professional standards. My point is that we should consciously avoid monopolistic public sector performance wherever there is any practical alternative.
- (5) As is frequently the case when a business corporation begins formal strategic planning, unrealistic expectations arise. Far too much is expected and particularly too soon. Any formal strategic planning process, whether in the private or public sector, is an evolutionary process. Even more important than this, is the understanding that the failure of public sector performance to meet expectations is not most importantly due to poor strategic planning. Rather, it results from the inability of elected officials to propose or vote for the solutions which they know are sound and consistent with long term strategic policies because of political short term pressures. In other words, elected officials more often than not know what ought to be done but they are unwilling or unable to do so because of the fear of adverse political consequences. Public sector strategic planning, no matter how well conceived, will always be subject to these realities and, consequently, expectations of the progress that will result from sound strategic planning must be kept realistic.

Page Twelve
December 5, 1975

I hope you will find this response to your questions useful to your deliberations. Let me emphasize again that there is no one right way to plan strategically and I have not attempted to propose a specific planning process. Instead, I have attempted to stress the essential underlying concepts which I believe to be fundamental to any effective formal strategic planning process. Specific proposals should be tested to determine whether they are supportive of these concepts or whether they violate them.

As I suggested at the beginning of this letter, the questions and issues you have raised are exceedingly complex and require far more detailed discussion than can be developed in a concise written response. For this reason I would welcome an opportunity to discuss these concepts orally and to respond to your questions.

A handwritten signature in dark ink, reading "Verne C. Johnson". The signature is written in a cursive style with a large, looping "V" and a long, sweeping "J".

VCJ/ch
Enclosures

cc: James W. Spensley
Counsel to the Subcommittee
on Fisheries and Wildlife
Conservation and the Environment.

GENERAL MILLS, INC.
STATEMENT ON CORPORATE PLANNING

The covering letter to which this statement is attached provides answers to questions 7 and 8. This statement develops a brief written answer to your specific questions 1-6 and, in some cases, provides a page reference to our Corporate Planning Manual. We have enclosed a copy of our Manual in order to give you a more detailed description of the General Mills planning process.

QUESTION 1: PHILOSOPHY

A statement of our planning philosophy can be found on pages 1-2 of the manual as well as in the letter to which this memorandum is attached. As a decentralized consumer product/service company which operates in a variety of businesses such as food, apparel, toys, restaurants, furniture, travel, and specialty chemicals, we have found it desirable to incent individual operations to keep up with changing business environments and uncertainties of the future as they might pertain to their respective businesses.

QUESTION 2: ORGANIZATION

Pages 3-5 of the Manual speaks to the GMI organization for planning at the corporate level. Briefly stated, the Corporate Planning Department consists of five individuals who report directly or indirectly to the Vice President and Director of Corporate Planning who, in turn, reports to the Vice Chairman of the Board and Chief Development and Financial Officer. At the operational level, a variety of organizational structures exist. The Chief Operating Officer usually seeks assistance from the controller and marketing staffs in preparing the operational plan. Most operations do not employ full time professional planners and none serve on the corporate staff.

Central corporate management has responsibility for establishing objectives in four broad areas: (1) stockholder objectives, (2) consumer objectives, (3) societal objectives, and (4) employee objectives.

To establish objectives in these areas, corporate management must review each division or group plan, decide how to allocate resources, and consider the implications of future trends in current businesses.

Alternatively, GMI line management is incented to propose strategies for meeting growth objectives consistent with corporate guidelines and within a specific charter area.

Since we don't employ planners as such, each chief operating officer is asked to present his plan both orally and in written form directly to the Corporate Review Group. Corporate Management, in turn, presents the Plan to the Board of Directors.

STATEMENT OF CORPORATE PLANNING
Page Two

The Corporate Planning Department serves as coordinator for operational planning efforts. It prepares the timetable, formats the financial schedules, and sets up the oral review sessions. It also provides counsel to operating units in instances where they seek assistance in improving their planning processes.

QUESTION 3: TIME FRAME

The GMI planning horizon is five years because we generally find that a majority of our new product plans can move from a concept state to maturity within that time frame. In addition, we believe that it's difficult to make meaningful projections over a time period greater than five years. We prefer to have some concentrated attention directed toward the first two or three years of the planning period and somewhat less precise strategic attention directed toward the later years of the planning horizon rather than some fuzzy thinking applied over a ten year period where little use can be made of the results.

Page 8 of the GMI Planning Manual contrasts our short term budgets and long term plans. Separate corporate staff departments coordinate the efforts. Our budgets are used as control techniques whereas our plans are not viewed as firm commitments to future performance.

Our planning process is reviewed on an annual basis and minor changes in emphasis are usually incorporated into each year's plan. The basic structure remains constant from year-to-year, but specific requirements for a given year will vary.

QUESTION 4: FORECASTING METHODS

At the corporate level, previously published environmental and economic forecasts are assembled into a consensus which is designed to be used by operations as a guide for planning. We do not forecast ourselves, but utilize a variety of governmental data sources and private services. We have found most of these sources adequate for our needs.

At the operating level, our separate businesses are free to adopt any forecasting method which meets their specific needs. Many operations have constructed models which accept various forecasts as part of the inputs. It's difficult to assess the adequacy of specific operational forecasting, however, over the years we have found a reasonably close correlation between the aggregate financial forecasts and actual results.

QUESTION 5: PLANNING METHODS

Pages 6-7 and 9-23 describe our planning methods in some detail.

In most years we incorporate some measure of contingency planning or "what-iffing" as a means of assessing the financial impact of a modification of strategies.

STATEMENT OF CORPORATE PLANNING
Page Three

We ask operations to give us a single "best estimate" rather than a range on the financial impact of their proposed strategies.

We employ a very simple computer model at the corporate level to assess the impact of a variety of input changes. In no sense is this model a construct of our separate businesses. We don't second guess individual plans but test the sensitivity of a modification in corporate totals.

In our view, the problems of uncertainty and rapid change can most meaningfully be handled with methods which are foundationed in the present environment and contain a clear indication of specific elements which are most likely to have a significant future impact. The main problem, of course, is to properly identify those elements which are most likely to be relevant. As a company, GMI struggles with this issue just like everyone else. We haven't found the perfect system yet.

QUESTION 6: NON-ECONOMIC FACTORS

Non-economic factors are considered as a part of the GMI planning process in two major areas: "Focus On Tomorrow" and Corporate Responsibility Planning.

The Planning Manual contains a copy of our internal publication entitled "Focus On Tomorrow." It contains information on demographic patterns, lifestyle and social trends, consumer purchasing trends, retailing trends, and governmental and social pressures on business. Each operation is asked to relate these trends to their particular business and comment on the impact of the more significant factors.

A brief statement and example of our Corporate Responsibility planning is found on pages 33-36 of the Manual. This type of non-financial planning represents an attempt to bring unquantified concerns to top management's attention for review and direction.

QUESTION 7: PLANNING INNOVATIONS

Discussed in the letter to which this memorandum is attached.

QUESTION 8: APPLICATIONS TO FEDERAL GOVERNMENT

Discussed in the letter to which this memorandum is attached.

GENERAL MILLS STRATEGIC PLANNING PHILOSOPHY

As Viewed by Jim McFarland

Strategic Planning is an essential ingredient to the success of General Mills. The development of long range plans upon which corporate strategy is built is a continuous process, although formally it occurs within General Mills but once a year. It permits corporate, division and operations managers to collectively stretch their thinking about the longer term opportunities and threats that exist in the competitive environment and to weigh alternatives and develop strategies for successful competition in that environment. The success of this effort, which is a major undertaking at General Mills, lies in the strong belief of your management group that the consumer's knowledge and expectations are rising so fast that in order for this corporation to continue to deliver good customer value and competitive profits, more than a casual attempt must be made to understand these changes and the required responses of management. Furthermore, the Corporate Plan which evolves from the long range planning process is not a thick bound, multi-colored report to be placed on an oak credenza to collect dust. Instead it is a concise, straightforward, working paper that will undergo annual revision in recognition of major changes in key environmental factors.



James P. McFarland
Chairman of the Board and
Chief Executive Officer

As Viewed by Jim Summer

We can define Strategic Planning as "a comprehensive mobilization of relevant data about a company and its economic environment--past, present, and future--and its organization in a coordinated way for the attainment of specific goals." The challenge of planning, however, lies not in the process of attaining goals, but in setting them. Our plans and goals vary with the nature of each operation's business, as they must, but the critical factor is establishing the right goals for each and gaining acceptance and support within the company for these goals. Only in this way can General Mills continue to meet the challenges of the future.



James A. Summer
Vice Chairman of the Board and
Chief Development and Financial Officer

As Viewed by Bob Kinney

Strategic Planning allows operations the opportunity to get away from day-to-day problems, assess the competitive environment, and develop programs needed to compete and grow. It is the key to success, but is only as good as the commitment to achieve--a commitment attained through the planning interlock among everyday operations, operating managers, and top management. Overlaying long range plans on the company's financial structure provides a perspective to better allocate GMI's resources, the critical function of top management in our quest for continued success.



E. Robert Kinney
President and Chief Operating Officer

HISTORY OF CORPORATE STRATEGIC PLANNING AT GMI

Formal Corporate Planning at General Mills, Incorporated began in the mid-1950's when then President Charles Bell formed the Commercial Development Department. The company's first long-range plan was published in September, 1956, as a one-time look at GMI's future. Historical data covered sales, earnings, and ROI for the company's divisions. Sales and earnings forecasts ran through 1965. However, the total plan covered only 19 pages. Activities of the department at this time included economic forecasting, industry and product-market analyses, and searches for acquisitions, primarily in supermarket products.

General Edwin Rawlings succeeded Bell as President in 1961. Under Rawlings' direction GMI began a major diversification into non-food areas and, in addition, divested some divisions. Playing a major part in this effort was the Commercial Development Department, whose role and function changed under Rawlings. Accompanying the change in purpose and operation was a change in name, to the Corporate Development and Planning Department. During this time strategic planning became more formal, assuming a heavy operations research orientation. Nonetheless, planning was very decentralized. The Department largely coordinated planning and consolidated and summarized operations plans. In addition, it identified growth areas, developed economic forecasts, and directed acquisition and venture activity. There was close linkage between market development, consumer research, acquisition-venture activity, and long range planning. During the mid-1960's, planning also began to expand its scope by examination of non-economic environmental trends.

Acquisition-venture activities and planning were split in 1965, and the planning and environmental analysis functions became the Corporate Planning Department. James P. McFarland succeeded Rawlings in 1967, then became Chairman and Chief Executive Officer in 1971. Under his direction General Mills has completed a major stage in its non-food diversification and is building on that base. Corporate Planning has played a major role in these efforts. The Corporate Planning Department during this period has strengthened its two major functions -- coordination of strategic planning and undertaking developmental-planning-economic analysis -- and, in addition, has assumed an expanded advisory role to corporate management.

Long range planning has taken on an increasingly strategic character and is now separated from the budgeting process and Operations Plans (the long range plans of strategic business groups) are used as the strategic foundation for Spring Programs. Activities are more systematized (but not as oriented toward use of sophisticated quantitative techniques) yet remain decentralized in character. Oral reviews, bringing together top corporate, divisional, and operating management have become an important part of the annual Fall (strategic) Planning process. Corporate level long range financial planning has evolved from a summation of operating financial schedules to a system utilizing discounts to assess the degree of business risk in various operations. Some staff groups also submit plans for "nonfinancial" areas, providing inputs to set corporate objectives for consumers, employees, and society.

Developmental planning has evolved to the level of researching environmental trends of importance to broad sectors of GMI. Analysis of economic and life-style trends occurs on an on-going basis, supplemented by special studies for corporate management. Output varies in form from the monthly newsletter FOCUS ON TOMORROW to in-depth studies on a given topic. Environmental trends are linked to the strategic planning process through an annual fall conference, featuring eminent speakers on important topics of general concern.

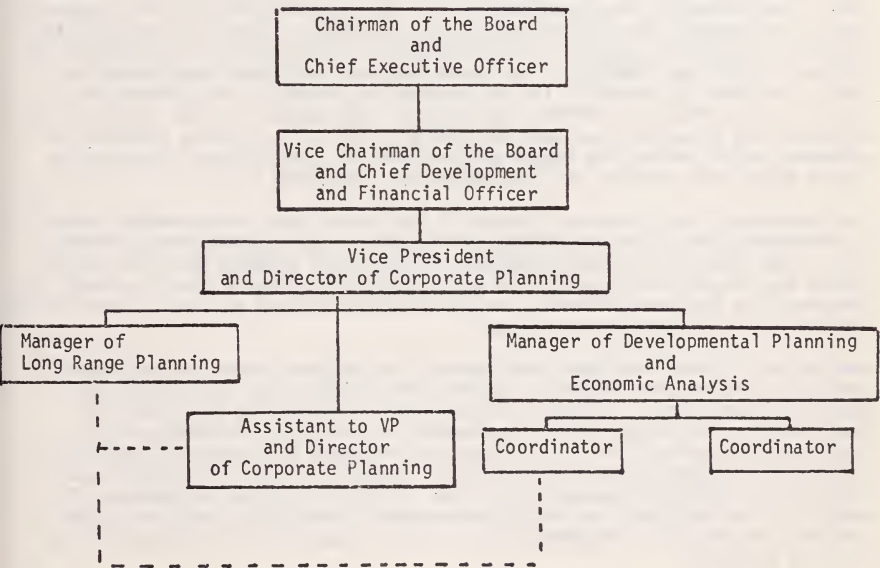
FUNCTION AND ROLE OF THE CORPORATE PLANNING DEPARTMENT

The basic responsibility of the Corporate Planning Department is to provide staff assistance to corporate, division, and staff department management in the strategic planning process, in ongoing strategic decision making, and in evaluating new business opportunities. The function of the Corporate Planning Department is to stimulate greater thought about the future in the key job of setting objectives and developing strategies for their fulfillment at all levels of management--not only for long range planning but also on strategic issues and on new business development. In performing this task, the Department functions in a coordinating, catalytic, focusing, stimulative, and communicative role.

In keeping with the fact that GMI is a decentralized corporation with a wide variety of different businesses, the Corporate Planning Department does not do planning. Rather, its primary role is to stimulate each operation to do effective planning for its own activities then to assist corporate management in coordinating the development of an integrated corporate plan.

The organization and reporting relationships of the Corporate Planning Department are shown in Exhibit I and the major responsibilities of the Department are summarized below:

Exhibit I



Coordination of the Strategic Planning Process

The Corporate Planning Department coordinates the formal planning process throughout the corporation. The Department does not itself plan for the corporation, but rather serves as a catalyst in the planning process. Long range planning at General Mills is a disciplined, decentralized process which recognizes future environmental and competitive trends, takes into account operations strengths and weaknesses, formulates objectives and determines appropriate strategies. Thus planning is the responsibility of every division and staff department throughout GMI; the combined efforts of these activities--under the coordination of the Corporate Planning Department--results in the Corporate Strategic Plan.

Developmental Planning and Economic Analysis

Another major function of the Corporate Planning Department is to perform economic analysis and assist in counseling management on the overall development of the corporation. It is responsible for examining problems or opportunities affecting GMI's development and communicating recommendations on how to deal with particular problems and maximize opportunities.

One of the ways the Department seeks to perform this role is through the coordination of environmental data. In this vein, it encourages and provides assistance to all management levels in developing systems for analyzing environmental trends and relating them to their activities. It stimulates the inclusion of environmental considerations both as an integral part of formal planning and the reliance of them in day-to-day decision making. One means by which the Department stimulates thought on environmental trends is through publication of the series FOCUS ON TOMORROW. Each issue analyzes the longer term trends of a subject relevant to General Mills and relates the trends to the corporation. Past issues of FOCUS ON TOMORROW have covered such subjects as the changing role of women, the longer term outlook for energy in the U.S., growing interest in obtaining better value, the longer term outlook for food outlays, the growing single young adult market, and the outlook for inflation.

The Department also stimulates thought on key longer term environmental trends by sponsoring management conferences periodically. Recent management conferences have focused on changing American lifestyle and economic patterns in the 1970s, key issues in the longer term environment and changing trends in retailing. Speakers have included Management Consultant Peter Drucker and Daniel Yankelovich, analyst of socio-psychological trends.

Another way in which the Department assists in the coordination of the overall development of the corporation is in the identification and analysis of new business opportunities. Corporate Planning gives counsel to all levels of management as appropriate in the development of new business opportunities. This function may take the form of supplying relevant environmental data, helping develop strategies to enter new areas, reacting to specific proposals, or assisting in refining presentations of new concepts to higher management. In addition, the Department assists top management in evaluating proposed opportunities and in making recommendations on the advisability of implementing new business programs.

The Corporate Planning Department also serves as a center for communicating information on longer term environmental trends. Subscriptions to outside research and forecasting services assist the Department in performing this function. Among the services that are available include Stanford Research Institute, The Conference Board, the Retail Intelligence System, and the MIT Industrial Liaison Program. In order to facilitate the informational gathering efforts of operations and other staff departments, the Corporate Planning Department prepares and distributes periodically an Environmental Reference Index which lists the various subjects on which secondary data exists throughout the company.

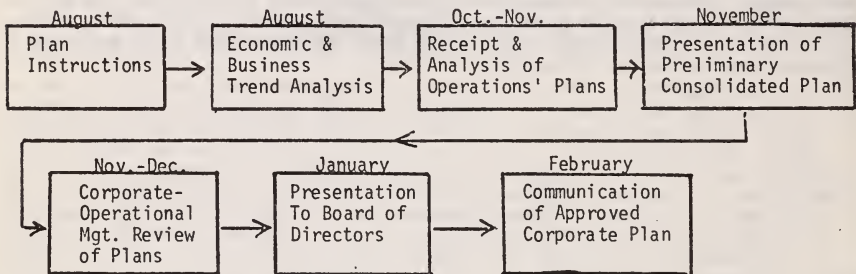
Perform Special Studies and Provide Counsel to Management

The third major function which the Corporate Planning Department performs is that of providing management with analysis and counsel as a part of the ongoing strategic decision-making process. The nature of this function varies with the requirements of management. For example, sometimes it takes the form of analyzing proposals, trends, or problems which are referred to the Department by top management. Other times it provides informal counsel to all levels of management requesting assistance in dealing with strategic issues. Still other times it brings to management's attention issues which the Department finds to be of strategic concern to the corporation.

STRATEGIC PLANNING PROCESS

There are seven major steps in the strategic planning process at General Mills. Sequentially, they are as follows: (1) preparation and issuance of planning instructions and schedules, (2) preparation and issuance of a long range economic and business trend analysis, (3) receipt and analysis of operations plans, (4) summarization and presentation of the preliminary consolidated plan to corporate management, (5) discussion of individual operations plans between corporate and operational management, (6) presentation of the revised consolidated plan to the Board of Directors for approval, and (7) communication of the approved Corporate Plan to operational management. The planning process, thus, can be diagrammed as shown in Exhibit 2, according to major events and their relative time of occurrence:

Exhibit 2



The above diagram suggests several points. First, strategic planning is a major undertaking. More than six months each year are devoted to the preparation, analysis, review, evaluation, and communication of long range plans. Moreover, there is a good deal of high-level involvement in the discussion and evaluation of operations plans. Almost six weeks of in-depth exchange of ideas between corporate and operations management is spent discussing objectives, strategies, and policy in broad and specific areas of concern to the continued growth of the firm.

Another point the diagram illustrates is that the basic approach to strategic planning is systematic. The Corporate Planning Department launches the planning process by distributing a set of instructions which establish a planning framework. The instructions communicate the expectations of corporate management in regard to the organization, content, and assumptions of operations plans. In addition, a timetable for the submission and review of plans is included along with forms that are used for transmitting financial data. To assist in the preparation of planning assumptions, the Corporate Planning Department also prepares and distributes annually an economic and business trend analysis which

summarizes most of the major changes expected to occur in demographic patterns, lifestyles, consumer attitudes, price levels, spending trends, government policy, and industrial competition. This analysis, termed "A Broad Outlook for the Coming Decade" is published in an issue of FOCUS ON TOMORROW. It updates and summarizes a more comprehensive look at these trends, published and distributed as the Business Environment Summary.

Still another point the diagram illustrates is that the approach to strategic planning is "bottom-up." "Bottom-up" planning is the approach to planning where planning activity begins at the lower end of the organizational hierarchy, proceeding to the top through several echelons of management. Operations objectives, strategies, and policy are determined at that level. Corporate management, through the Corporate Planning Department, issues very broad directions, delegating determination of objectives and formulation of strategy as far down the organization hierarchy as sound judgment indicates. The role of the Corporate Review Group (consisting of the Chairman and Chief Executive Officer, the Vice Chairman, the President and Chief Operating Officer, and selected operational and staff officers) is to review these objectives and strategies for consistency with the external environment and for consistency with overall corporate objectives.

Finally, the diagram illustrates that there is communication back to operations regarding decisions made by corporate management as a result of issues discussed in the review sessions. A final Corporate Plan is published summarizing overall corporate objectives, major strategies, and assignment of responsibilities for the achievement of these objectives.

The Corporate Planning Department maintains responsibility for reviewing and updating the planning process on an annual basis. Financial schedules and points of strategic emphasis are changed from year to year within an overall frame work which remains relatively constant.

A COMPARISON OF SPRING PROGRAMMING AND STRATEGIC (FALL) PLANNING

Spring Programming and Fall Planning are General Mills' two major corporate-wide planning undertakings. Though they differ with respect to fundamentals, there are several similarities between Spring Programming and Fall Planning. Both planning efforts are coordinated by corporate staff departments. Also, both occur annually. In addition, there is major involvement by corporate, division, and operations management in both Spring Programming and Fall Planning.

However, there are several major differences. Among them are the following:

1. Different time horizons.
2. Different requirements for detail.
3. Different monitoring and control techniques.

Spring Programming constitutes GMI's budgeting process. During the process, detailed financial projections for the next two fiscal years are made and agreed upon by corporate and operations management. Projections of sales, unit volume, profit, fixed assets, working capital, and cash flow are made, along with precise breakdowns of expenditures. Short-term objectives and action plans are also included in the programs along with estimates of personnel needs. The Spring Program process is coordinated by the Corporate Analysis Department. The Department analyzes and consolidates operations programs and other inputs in order to determine the next year's actual operating budget for a given operation and the corporation in total. Compensation is tied formally to achievement of Spring Program objectives for the first of the two year time horizon. Therefore, financial performance is tracked, analyzed, and reported.

On the other hand, long range plans include broad financial forecasts for the next five years. The thrust, however, is strategic -- stating the mission of the operation, its current competitive position, longer-term environmental trends and their potential impact, and objectives and strategies to reach forecasts.

Operations are asked to supply financial information covering a 5 year period because this is a sufficient amount of time to achieve sustaining performance levels for most product and service areas. However, in some instances a longer time frame may be required to demonstrate sustaining performance levels of any given strategy. In those cases, operations are encouraged to supplement their normal financial schedules with sufficient detail to enable corporate management to assess the impact of the strategy.

Fall Planning is coordinated by the Corporate Planning Department which assumes primary responsibility for operations plan analysis and consolidation. Like Spring Programs, operations plans show projections of sales, earnings and investment, but only on a broad, summary basis. Unlike Spring Programs, operations plans are not commitments to future performance, per se. Therefore, actual results versus planned results are not tracked and monitored to the same extent as Spring Programs.

OPERATIONAL PLANNING

Objective

The main objective of the Strategic Plan is to allow divisions and subsidiaries to develop strategies to meet their respective growth objective based on longer term economic and environmental trends. Rather than develop a new plan every year, operations are encouraged to concentrate primarily on the significant changes in the economy, the competitive environment, and their objectives or strategies that have occurred since last year's plan was prepared. If these factors were discussed fully in last year's plan and no significant changes have occurred in the interim, then a brief restatement of these strategies is all that is required. Those operations which have initiated major changes in strategies or financial results and those operations assembling their first Strategic Plan should fully discuss all their objectives, strategies, and financial projections.

Responsibility

As a rule, the general manager of each division and the president of each subsidiary is responsible for the execution of an operation's Strategic Plan. As a practical matter, significant inputs from marketing, sales, production, design, distribution, personnel, R & D, and finance are desirable. Many operations find that the planning process allows functional areas to alert one another to impending changes which might go unrecognized for quite some time.

In some areas, presidents of GMI subsidiaries report to a group level executive. Where this relationship exists, the group level executive performs a planning function which is similar to the role of the Corporate Planning Department. He does not plan per se, but rather, coordinates the diverse elements of several operational plans into a meaningful whole.

Organization

A Strategic Plan consists of two parts: (1) a narrative description of environmental factors, objectives, strategies, and assumptions, and (2) financial schedules. Both the narrative and the financial schedules should be organized around Strategic Business Groups. The definition of Strategic Business Groups will vary from operation to operation, however Strategic Business Groups should lend themselves to (1) the development of long term strategies, (2) the assignment of responsibility for planning and implementation, and (3) communication of major strategies for generating future growth. Some examples of possible Strategic Business Groups include: (1) product line, (2) type of distribution, (3) geographic region, and (4) subsidiary name.

Planning Methods

The Strategic Plan submitted to the Corporate Planning Department by operations contains one set of financial results and is considered a "most likely" case. Operations are encouraged, although not required, to develop contingency plans for "best case - worst case" scenarios. Although these alternative plans do not necessarily become a part of the operations written plan, they are valuable in preparing the operating management for the oral review session with top corporate management.

To aid an operation in developing alternative plans, the use of computer modeling and forecasting is encouraged although not required. Many operations find that a simple model which allows them to test the implications of various inputs on financial results is the time saver in their respective planning processes.

Approach to Risk

Since the risks involved in new businesses are significantly different from those in present businesses, the Plan should keep these two categories separate. In general, present business should include both established products and new products that are presently or are planned to be positioned in markets in which the strategic business group or division already competes. It follows, therefore, that in addition to existing product groups, extensions (i.e., new flavors, sizes, shapes) of existing product groups fit the definition. Impact is important; therefore, new efforts in present business which are expected to be major sales and profit contributors should be discussed individually in the narrative and itemized separately in the financial schedules.

Perhaps more easy to identify is internal new business. Internal new business is a product category which represents an effort to position either established or new products into markets in which the strategic business group or division does not presently compete. It also includes any new strategic business group requiring major (in excess of \$200,000) new investment.

Internal new business should be discussed separately from present business. And, new acquisitions should be discussed separately.

The following matrix may be helpful in summarizing the difference between present business and internal new business:

	Established Markets	New Markets
Established Products	Present Business	Internal New Business
New Products	Present Business	Internal New Business

It shows that in attempting to organize the Plan according to risk, the critical factor is markets rather than products.

All new businesses discussed in the narrative should be included in the financial schedules. The Corporate Review Group recognizes that all new businesses will not succeed or even be attempted, yet it wants to be able to consider fully the potential for new growth areas. In view of this objective, it should be noted that Strategic Planning is not a formal commitment to future performance.

Planning Assumptions

In developing the Plans, operations are requested to use the basic demographic and economic assumptions which are published annually in the August issue of FOCUS ON TOMORROW, an internal publication for GMI management. This helps ensure greater commonality among all Plans. Planning assumptions are developed from a variety of sources. Published services like the Conference Board, Predicasts, Stanford

Research Institute, and various government projections and statistics are used. Where operations choose to use other assumptions, they are asked to note where they have been used along with a brief explanation for the deviation. Operations are also requested to indicate specific industry assumptions which are used to foundation any specific part of a Plan.

In this year's planning process, relatively optimistic forecasts of the future economic environment were proposed as foundationing assumptions for building the operational plan. Because of recent fluctuations in important economic variables which had remained relatively constant in the past, corporate management wanted to find out how different our longer term financial projections would look under a slightly less optimistic future economic environment. Accordingly, we purchased the Chase Econometric Associates forecast entitled, "The Next Ten Years: Inflation, Recession, and Capital Shortage," prepared by Dr. Michael K. Evans. Working through group level management, we are assembling financial results under this alternative scenario.

Growth

The corporation has a public commitment to grow at least 10% per year in Earnings Per Share. Achieving this goal implies that there will be a mixture of growth rates throughout the General Mills portfolio of businesses. Some will grow at 10%; others at less than 10%; and still others at a rate greater than 10%. These growth rates consist of real and inflationary growth. However, varying rates of inflation will affect different businesses in different ways. Therefore, in order to give the Corporate Review Group a feel for real growth, operations are asked to cover this topic in the narrative and financial portions of their Plan.

Content of Written Plans

A. SUMMARY OF TOTAL PLAN

The summary of a plan should be divided into two segments: (A) major changes from last year, and (B) highlights of this year's plan. The first segment should review changes in (1) strategic position, (2) objectives, (3) strategies and (4) financial projections. If there have been no significant changes in any or all of these, please note this. The second segment should highlight the most important aspects of this plan, including a brief explanation of the significant changes since last fall. The summary need not exceed two pages in length.

B. DESCRIPTION OF STRATEGIC POSITION

After the summary, the plan should contain a description of the current strategic position of the total operation as well as each strategic business group. Expand this discussion to include changes expected in the business environment over the next several years.

Please cover each of the following points in this section placing emphasis on changes that have occurred since writing the last strategic plan:

1. The nature of each strategic business group.
2. The size and growth expectations for each strategic business group over the planning period.
3. The environmental and resource factors expected to have the most significant impact on each strategic business group (i.e., political, legal, demographic, social, economic, technological, energy, etc.).
4. The major competitive strengths and weaknesses in each strategic business group and how they impact on the operation's ability to compete.
5. The impact of competitive developments on each strategic business group (i.e., new products, mergers, acquisitions, etc.).

6. The impact of changing raw material prices and availability on the margins and productivity associated with each strategic business group.
7. The impact of regional differences on the consumer demand for products or services in each strategic business group.

C. STATEMENT OF OBJECTIVES

After discussing the strategic position, develop objectives for the total business as well as for each strategic business group. Where objectives have changed significantly from last year, please indicate this and state why they have changed. In general, objectives are usually based on key measurements of performance such as:

1. Share of market.
2. Sales and earnings dollar or percentage growth rates.
3. Return on sales.
4. Return on investment.
5. Other qualitative factors which you find particularly significant (i.e., new products, productivity increases, consumerism, pollution control, employee development, affirmative action, energy conservation, etc.).

D. DESCRIPTION OF STRATEGIES

After stating the objectives each operation should describe the proposed strategies which will allow it to accomplish the objectives stated for each strategic business group. This is the most important section of the written plan and usually occupies the most space. This description should identify the important elements of the strategy and explain them in enough detail to give the Corporate Review Group sufficient understanding to evaluate the overall strategy. The specific elements the description should cover may include such things as new products, new markets, new pricing, new distribution, and new promotions, acquisitions, divestment or pruning activities. In general, strategies will be evaluated on the basis of the following criteria:

1. Consistency with the external economic, political, technological, and social environment.
2. Consistency with internal strengths and weaknesses.
3. Consistency with established corporate policy.
4. Consistency with longer term strategic growth goals of the company.
5. Sufficiency of challenge of the overall strategic direction.
6. Degree of risk.
7. Level of new investment requirements.

If the numerical information contained in the financial schedules will help the reader better understand strategies, you may want to include projections of sales, earnings, and new investment in this section.

You do not need to include an elaborate discussion of a strategy which was fully described last year--just update your major actions without including a lot of detail. But, where your strategies have changed from last year, please discuss fully the nature of the change, the reason for the change, and the new strategy you propose to pursue.

E. FINANCIAL SCHEDULES

The purpose of financial schedules is to provide the review group with an overall impression of the results of accomplishing proposed objectives. Since the implementation of most strategies requires new capital investment, they also need to know how much investment is needed and when it will be required. After making a few general comments, each financial schedule will be explained. These schedules are designed as samples. Most operation will not be able to post numbers directly to the samples and include them in their pamphlets. Rather, the schedules should be typed to suit a particular strategic business group structure.

All dollar amounts should be rounded to the nearest hundred thousand dollars. For example, \$2,251,000 should be expressed as \$1.3 on the schedules.

Percents should be rounded to the nearest tenth--so that 10.6325 becomes 10. on the schedules.

The five-year compound growth rate calculations should be based on 1975 actual results. The Corporate Analysis Department has CGR tables if you need them.

Some operations may want to take note of the fact that fiscal 1976 is a 53 week year.

All operations should use the same strategic group breakdown for all schedules and restate all historical financial information to a 1976 basis. The 1976 figures should agree with your recent most recent corporate estimates.

Some operations find it useful to show numbers for each strategic group and layer on a "provision for failure" discount. Sometimes this discount is provided at the group level. Please feel free to continue this practice if you find that it serves your purpose.

All financial information should be presented in current rather than constant dollars, and thus, include inflation. The August issue of FOCUS ON TOMORROW will provide the planning assumptions for domestic operations to use. Foreign operations should check with their group headquarters for guidance. All financial projections should reflect your best judgment of the impact of the economic and environmental trends identified in FOCUS ON TOMORROW.

SCHEDULE I

Schedule I provides the review group with a summary of important financial information with a breakdown between present, internal new, and acquisition businesses. The line labeled "Unit Volume or Constant \$ Sales Growth" is new this year. It should be used to provide year-by-year and compound growth rate information for your unit delivery/sales volumes. If your operation is one which does not track unit volumes, fill in the schedule with your best estimate of sales growth rates in constant dollars (i.e., dollars before inflation) t

SCHEDULE II

Schedule II requests sales, earnings and investment base information by strategic group. The basic purpose is to provide insight to growth and profitability relationships within your organization. The schedule is separated between present and new businesses to focus on the relative magnitudes of these components. The definitions for ROS and ROI are the same as you used in your last Spring Program. ROS is controllable earnings divided by net customer sales and ROI is controllable earnings plus working capital charge divided by gross investment base.

SCHEDULE III

Schedule III asks for information on net fixed asset cash flow, working capital, depreciation, lease expense, and working capital charge. Your net fixed asset cash flow section should be organized by strategic business group. Please show cash flow rather than project authorization amounts. This is, financial information should reflect when the money will be spent (for Plan years) or was spent (for the two years of history) rather than when the projects were or will be submitted for approval. Do not include the purchase price of acquisitions in the fixed asset cash flow numbers. Include only additional capital requirements following acquisition. The purchase price of acquisitions should be included in your Schedule II Gross Investment Base and in the Schedule IV cash flow summary.

The lower portion of Schedule III requests information on working capital, book depreciation, lease expense, and working capital charge. These items, when aggregated for the Corporation, allow the Corporate Review Group to analyze and evaluate trends that are not readily apparent in summary information shown on other schedules.

SCHEDULE IV

Schedule IV asks for cash flow information for your combined present, internal new, and acquisition business areas. The net cash flow total should also appear on Schedule I. This year's cash flow schedule asks for acquisition purchase price as an outflow of funds in the appropriate year. In this way, net sales, controllable earnings, gross investment base, and net cash flow will all contain comparable acquisition financial information. Note that total inflows equal controllable earnings plus working capital charge, minus taxes on the sum of lines A and B, plus annual depreciation expense. The supplementary information requested at the bottom of this schedule consists of an after-tax LIFO adjustment and a currency exchange rate for International earnings. The Treasurer's Department will supply currency exchange rate assumptions later in the planning process. The purpose of this line on the schedules is to establish a record of the exchange rate actually used for future reference.

SCHEDULE I - TOTAL BUSINESSES
FINANCIAL SUMMARY

Actual* 1974	Actual* 1975	(\$ In Millions)	Est. 1976	Plan				Compound Growth Rate 1975-80
				1977	1978	1979	1980	
\$	\$	NET CUSTOMER SALES-TOTAL	\$	\$	\$	\$	\$	%
NA	%	% Growth	%	%	%	%	%	NA
Present Business Internal New Acquisitions								
\$	\$	CONTROLLABLE EARNINGS-TOTAL	\$	\$	\$	\$	\$	%
NA	%	% Growth	%	%	%	%	%	NA
Present Business Internal New Acquisitions								
%	%	RETURN ON SALES-TOTAL	%	%	%	%	%	NA
Present Business Internal New Acquisitions								
\$	\$	GROSS INVESTMENT BASE-TOTAL	\$	\$	\$	\$	\$	%
Present Business Internal New Acquisitions								
%	%	RETURN ON INVESTMENT-TOTAL	%	%	%	%	%	NA
Present Business Internal New Acquisitions								
\$	\$	NET CASH FLOW-TOTAL	\$	\$	\$	\$	\$	%
NA	%	TOTAL UNIT VOLUME OR CONSTANT \$ SALES GROWTH	%	%	%	%	%	NA

*Restate Comparable to 1976

SCHEDULE II - PRESENT BUSINESSES
SALES, EARNINGS, & INVESTMENT BASE

Actual* 1974	Actual* 1975	(\$ In Millions)	Est. 1975	Plan			Compound Growth Rate 1975-80
				1977	1978	1979	
\$	\$	NET CUSTOMER SALES-TOTAL	\$	\$	\$	\$	%
NA	%	% Growth	%	%	%	%	NA
A. Strategic Group Name							
B. Strategic Group Name							
Etc.							
\$	\$	CONTROLLABLE EARNINGS-TOTAL	\$	\$	\$	\$	%
NA	%	% Growth	%	%	%	%	NA
A. Strategic Group Name							
B. Strategic Group Name							
Etc.							
\$	\$	GROSS INVESTMENT BASE-TOTAL	\$	\$	\$	\$	%
NA	%	% Growth	%	%	%	%	NA
A. Strategic Group Name							
B. Strategic Group Name							
Etc.							
%	%	RETURN ON SALES-TOTAL	%	%	%	%	NA
A. Strategic Group Name							
B. Strategic Group Name							
Etc.							
%	%	RETURN ON INVESTMENT-TOTAL	%	%	%	%	NA
A. Strategic Group Name							
B. Strategic Group Name							
Etc.							

*Restate Comparable to 1976

SCHEDULE II - ACQUISITIONS
SALES, EARNINGS, & INVESTMENT BASE

245

Actual* 1974	Actual* 1975	(\$ In Millions)	Est. 1976		1977		1978		1979		1980	
			\$	%	\$	%	\$	%	\$	%	\$	%
NET CUSTOMER SALES-TOTAL			\$	%	\$	%	\$	%	\$	%	\$	%
% Growth												
A. Strategic Group Name												
B. Strategic Group Name												
Etc.												
CONTROLLABLE EARNINGS-TOTAL			\$	%	\$	%	\$	%	\$	%	\$	%
% Growth												
A. Strategic Group Name												
B. Strategic Group Name												
Etc.												
GROSS INVESTMENT BASE-TOTAL			\$	%	\$	%	\$	%	\$	%	\$	%
% Growth												
A. Strategic Group Name												
B. Strategic Group Name												
Etc.												
RETURN ON SALES-TOTAL				%		%		%		%		%
% Growth												
A. Strategic Group Name												
B. Strategic Group Name												
Etc.												
RETURN ON INVESTMENT-TOTAL				%		%		%		%		%
% Growth												
A. Strategic Group Name												
B. Strategic Group Name												
Etc.												

*Restate Comparable to 1976

SCHEDULE III - PRESENT BUSINESSES
NET FIXED ASSET CASH FLOW

Actual* 1974	Actual* 1975	(\$ In Millions)	Est. 1976	1977	1978	1979	1980
		TOTAL PRESENT BUSINESSES	\$	\$	\$	\$	\$
		A. Strategic Group Name					
		B. Strategic Group Name					
		Etc.					
Memo: Cash Flow From Major Projects (over \$500,000)							
		A. Project Name					
		B. Project Name					
		Etc.					
		Average Annual Working Capital -					
		Total Present Businesses	\$	\$	\$	\$	\$
		Book Depreciation Expense -					
		Total Present Businesses	\$	\$	\$	\$	\$
		Lease Expense -					
		Total Present Businesses	\$	\$	\$	\$	\$
		Working Capital Charge -					
		Total Present Businesses	\$	\$	\$	\$	\$

SCHEDULE III - INTERNAL NEW BUSINESSES
NET FIXED ASSET CASH FLOW

Actual* 1974	Actual* 1975	(\$ In Millions)	Est. 1976	1977	1978	1979	1980
\$	\$	TOTAL PRESENT BUSINESSES	\$	\$	\$	\$	\$
		A. Strategic Group Name					
		B. Strategic Group Name					
		Etc.					
Memo: Cash Flow From Major Projects (over \$500,000)							
		A. Project Name					
		B. Project Name					
		Etc.					

\$	\$	Average Annual Working Capital -					
		Total Internal New Businesses	\$	\$	\$	\$	\$
\$	\$	Book Depreciation Expense -					
		Total Internal New Businesses	\$	\$	\$	\$	\$
\$	\$	Lease Expense -					
		Total Internal New Businesses	\$	\$	\$	\$	\$
\$	\$	Working Capital Charge -					
		Total Internal New Businesses	\$	\$	\$	\$	\$

*Restate Comparable to 1976

SCHEDULE III - ACQUISITIONS
NET FIXED ASSET CASH FLOW

Actual* 1974	Actual* 1975	(\$ In Millions)	Est. 1976	1977	1978	1979	1980
\$	\$	TOTAL PRESENT BUSINESSES	\$	\$	\$	\$	\$
		A. Strategic Group Name					
		B. Strategic Group Name					
		Etc.					
Memo: Cash Flow From Major Projects (over \$500,000)							
A. Project Name							
B. Project Name							
Etc.							

\$	\$	Average Annual Working Capital - Total Acquisitions	\$	\$	\$	\$	\$
\$	\$	Book Depreciation Expense - Total Acquisitions	\$	\$	\$	\$	\$
\$	\$	Lease Expense - Total Acquisitions	\$	\$	\$	\$	\$
\$	\$	Working Capital Charge - Total Acquisitions	\$	\$	\$	\$	\$

*Restate Comparable to 1976

SCHEDULE IV - TOTAL BUSINESSES
CASH FLOW & SUPPLEMENTARY INFORMATION

Actual* 1975	(\$ In Millions)	Est. 1976	1977	1978	1979	1980
\$	TOTAL NET CASH FLOW	\$	\$	\$	\$	\$
---	<u>Total Inflows</u>	---	---	---	---	---
	A. Controllable Earnings					
	B. Add Back Working Capital Charge					
	C. Subtract Tax @ ____%** of A. + B.					
	D. Depreciation Expense					
---	<u>Total Outflows</u>	---	---	---	---	---
	A. Change In Working Capital					
	B. Net Fixed Asset Cash Flow					
	C. Acquisition Purchase Price					
\$	AFTER TAX LIFO ADJUSTMENT-TOTAL	\$	\$	\$	\$	\$
NA	CURRENCY EXCHANGE RATE (INTERNATIONAL EARNINGS ONLY)	\$	\$	\$	\$	\$

*Restate Comparable to 1976

**Domestic Divisions should use 50%. International and domestic subsidiaries should use appropriate tax rate.

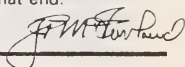
PLANNING ASSUMPTIONS

Noneconomic factors are introduced into the planning process via the in-house publication "Focus On Tomorrow." The attached issue discusses demographic patterns, lifestyles and social trends, consumer purchasing trends, retailing trends, and governmental and social pressure on business. Each operation is asked to relate these trends to their particular business and comment on the impact of the more significant factors.

FOCUS ON TOMORROW

"General Mills' continued success is dependent upon our ability to capitalize on emerging opportunities. This series, aimed at helping you plan ahead, is committed to that end."

August 1975



This issue of FOCUS ON TOMORROW consists of the Corporate Planning Department's annual compilation of broad longer term environmental trends in the United States. Most of the trends discussed last year continue in effect, but this year's summary has been revised to reflect a slower expected population growth rate and the impact of the recent recession. This issue was prepared by Jim O'Neill and Chad Nelson of the Corporate Planning Department drawing on a large collection of secondary data developed by several outside organizations. A number of people within General Mills served as reactors.

Specific planning assumptions which are to be used in the Strategic Planning process are contained on page 8.

THE STRATEGIC PLANNING ENVIRONMENT

OVERVIEW

The economy is expected to rebound during the next two years, despite the current uncertainty and relatively high rates of unemployment and inflation. Beyond the recovery the economy is expected to average close to 3% real growth annually. More working wives, better educations, and later marriages will result in more income per family; median family income is expected to rise by more than 10% in constant dollars during the next five years. Much of this increased income will be spent for the higher costs of necessities and for quality upgrading in basic items, but the trend to smaller families will still enable outlays for discretionary purchases to rise substantially, particularly those associated with leisure activities.

The shape and complexion of American society will continue to change during the next five years. Demographically, the 25-44 age group will rise the fastest (up 15%), followed by those 65 and over (up 10%). The increasing number of young adults will expand the number of households by 9% during the same period, creating significantly expanded demand for household-related products.

Values and lifestyle patterns will undergo further evolutionary changes, with more emphasis being placed on individual expression and development, obtaining good value, and achieving a better quality of life. Family relationships will change as more women pursue activities outside the home, as household duties are increasingly shared between the husband and wife, and as children are conceived only when they are planned. Government attempts to control the economy will intensify, with emphasis on controlling inflation, reducing unemployment, expanding energy production, curtailng pollution, and regulating business practices affecting consumers, employees, and society.

Demand for consumer products and services will grow substantially during the decade as a result of more people, greater purchasing power, and an increasing number of households.

Published by the Corporate Planning Department

ECONOMIC TRENDS

Real Gross National Product (GNP) decreased 8% from its peak at the end of 1973 to June, 1975. The economy is expected to recover from this trough during the next two years averaging 6% real growth annually. Subsequently, real economic growth is expected to average close to its historic average (1955 to 1975) of 3% annually for the rest of the decade. Under this assumption, "real" GNP should increase over 20% in constant dollars during the 1975-80 period. Despite the recovery in the economy, unemployment rates are expected to decrease slowly from present high levels to 5-6% by 1980.

Inflation is expected to moderate from recent double digit levels but remain relatively high, with increases in the Consumer Price Index averaging about 6% annually (vs. 2.3% per year during the 1960s). Factors exerting strong inflationary pressure include:

(1) government efforts to stimulate the economy in order to lower unemployment rates, (2) increased ability of large businesses and strong labor unions to raise prices even when demand drops, and (3) increases in energy costs potentially resulting from price decontrol of "old" oil, possible deregulation of natural gas prices, and the likely shift to more expensive fuels as natural gas usage by industry is curtailed.

DEMOGRAPHIC PATTERNS

The Corporate Planning Department has developed population projections for the next decade based on a total fertility rate of 1.9 children per woman. This fertility rate, which is midway between the most recent Census Series II and Series III projections, has been selected because it is consistent with recent fertility experience, and such factor as the increasing availability of alternative roles for women, the strong preferences of young marrieds toward smaller family size, and the availability of improved contraceptive technology. (See the July issue of FOCUS ON TOMORROW for a more complete discussion of these factors and changing U.S. population patterns.) The table below summarizes the key demographic changes projected for the next ten years. Note that population under the 1.9 fertility rate assumption will grow at 0.8% per year during the next several years--slightly slower than the 0.9% growth rate previously expected with the 2.1 assumption. During the next five years, the total population is expected to increase by 8.1 million--85% of this growth will occur in the suburbs.

U.S. POPULATION PATTERNS
(1.9 total fertility rate assumption)

Age Group	(in millions)				Percent Change		
	1970	1975	1980	1985	1970-75	1975-80	1980-85
Under 5	17.2	15.9	16.1	18.1	- 8%	1%	12%
5-14	40.7	37.7	33.9	32.9	- 7	-10	- 3
15-24	36.5	40.2	41.5	38.5	10	3	- 7
25-34	25.3	30.9	36.2	39.9	22	17	10
35-44	23.2	22.8	25.7	31.3	- 2	13	22
45-54	23.3	23.8	22.6	22.4	2	- 5	- 1
55-64	18.7	19.8	21.1	21.5	6	7	2
65-Up	20.1	22.3	24.5	26.7	11	10	9
TOTAL	204.9	213.5	221.6	231.3	+ 4.2%	+ 3.8%	+ 4.4%
Family Households	51.5	56.6	61.2	66.1	10%	8%	8%
Households Headed by Singles	12.0	13.9	15.8	17.4	16%	14%	10%
TOTAL HOUSEHOLDS	63.5	70.5	77.0	83.5	11%	9%	8%

SOURCE: U.S. Bureau of Census, PREDICASTS, and GMI Corporate Planning Department.

Other significant demographic trends are discussed in the following sections.

MORE YOUNG FAMILIES. During the 1975-80 period, the most prominent demographic growth will occur in the 25-44 age group, which will rise by 15% from about 54 million to 62 million. The increasing number of young adults will result in a net increase of about 1.3 million households annually or a 9% increase in the number of households between now and 1980. By 1980, households headed by persons 25-34 will increase by 22% to 18 million or 24% of all households. These trends will create significantly expanded demand for household-related products such as furniture, appliances, home furnishings, and consumer electronics--all this in turn stimulating greater demand for lending and financial services.

MORE SMALL FAMILIES. While there will be more families, average family size is expected to continue to decline as a result of more effective contraceptive technology, more working wives, later first children, and changing attitudes on abortion. Smaller family size will result in a substantial increase in per capita income (there will be fewer persons to divide the family's income among). Although family size will decline, the large number of women in the key childbearing age groups will produce an absolute increase in total births during the next several years. The under-5 age segment will begin increasing in size by 1978, reversing its negative growth pattern of recent years. This age group will be over 2 million children larger in 1985 than today with almost all the growth occurring between 1980 and 1985. A greater proportion of these children will represent the family's first child which usually requires greater expenditures for baby-related equipment than later children.

MORE AFFLUENT FAMILIES. Median family income should rise from \$12,840 in 1974 to about \$14,200 (in 1974 dollars) by 1980. Much of this growth in family income will be due to more working wives and more, better educated, young adults in the labor force. As incomes rise, a larger portion is expected to be available for discretionary spending. The Conference Board's measure of real growth of consumer affluence and discretionary purchasing power (i.e., after-tax supernumerary income) is projected to increase 11% annually through 1980. Supernumerary income is defined as all income in excess of \$20,000 per year (in 74\$) flowing to a family unit and is adjusted for taxes in order to represent the share of consumer income not needed for "essentials" and thus available for discretionary spending.

Year	Number of Families with Supernumerary Income		After-tax Supernumerary Income	
	Millions	% of All Families	74\$ (billions)	% of all Income
1965	6.0	12.3%	\$ 41.7	8%
1974	12.1	21.8	82.6	12
1980	20.5	33.5	156.3	17

The number of families with supernumerary income will increase 9.2% per year through 1980 (compared to 8.1% CGR from 1965 to 1974). By 1980, one-third of all families are expected to have supernumerary income, and the average family with supernumerary income is expected to have \$7,600 available for discretionary spending after adjusting for taxes, up from \$6,800 in 1974.

MATURING AGE STRUCTURE. For years the U.S. population has been skewed toward children and youths. Ten years ago the under-25 group accounted for close to one-half of the total population; today the under-25s account for 44%, and by 1985 the figure will be 39%. Not only will the younger age segment's share be declining, but their absolute numbers will fall by more than 2 million over the next 5 years. The median age of the population is expected to increase to 30 by 1980, from 28.8 today.

MORE OLDER ADULTS. The number of people in the over-65 segment will increase at an average annual rate of 1.9% during the coming 5 years--the fastest growing age group after the 25-44 ages; by 1985, 11% of the population will be in this age segment. By the end of the decade, the average married couple is expected to have approximately 20 years together after their youngest child leaves home (i.e., "empty nesters"). The economic situation of the over-65 segment has improved dramatically with only 11% below the poverty line, compared to more than 27% in 1960. Further income improvements are expected as the proportion of this segment with incomes in excess of \$7,000 (constant dollars) will increase from 28% in 1972 to 34.5% in 1980. With higher incomes and curtailed obligations, this large and growing population segment will have the discretionary income to enjoy such things as extensive travel, luxury apartments and townhouses, and eating out more often. Growth in the 65-and-over market, coupled with rising social security and retirement benefits, will also stimulate demand for more nursing homes, health services, specialized foods, and recreational programs for the elderly.

OTHER DEMOGRAPHIC TRENDS. Two age segments of the population are expected to decline in numbers during the next five years, with the number of children 5-14 declining sharply, while the number of adults 45-54 decreases by 1 million. The number of young adults ages 15-24 is peaking--growing modestly to 41.5 million in 1980 and then declining to 38.5 million in 1985.

Another significant trend is the rapid growth of the nonwhite population; it is expected to grow twice as fast as the total population; this growth rate, combined with increasing incomes result in this market becoming increasingly important for a broader range of products and services.

LIFESTYLES AND SOCIAL TRENDS

Recent rising concerns about such things as economic growth, inflation, shortages, the credibility of government officials and institutions in general, and the problems associated with an increasingly complex society are leading Americans to shift back toward "basics" and focus more on "simpler" lifestyles. These trends have had an impact on many different lifestyle aspects--everything from the movement to smaller cars and foods offering better perceived value, to the growth of do-it-yourself activities. Many of the recent changes in consumer outlook and resulting lifestyles are expected to endure at least partially, for an extended time. On the whole, changes in lifestyles and values will be more evolutionary rather than revolutionary through 1985 for the vast majority of Americans, representing adaptations of fundamental beliefs and values to new social, economic, technological, and ecological conditions. Within this context, the following value trends and lifestyle patterns are likely to be significant during this decade:

--Growing Interest in Individual Expression and Development. Increasing affluence and education levels since World War II has enabled Americans to shift their primary concern away from satisfying basic "security" needs, toward the pursuit of inner, personal concerns and individuality. As consumer incomes rebound from the recent recession, many will return to an attitude of expressing individual differences and lifestyle preferences, resulting in more open-mindedness about deviation from societal "norms". Associated with the movement to individualism will also be a growing desire to find satisfaction and self-fulfillment from creating and fixing things, adding stimulus to the do-it-yourself culture.

In addition, new employee-employer relationships will emerge from the trend toward greater individualism. As the economy recovers and a feeling of economic security gradually returns, individuals will seek opportunities for greater creative expression in their work. Large organizations will gradually adapt to this desire for individuality. Employees will increasingly be encouraged to participate in

social service activities and efforts will be made to enrich routine and monotonous jobs through employee participation in some work-related decisions, through job rotation, and through job enlargement programs.

-- *Rising Importance of Education.* People are spending more time at school, starting earlier (with more pre-kindergarten programs) and staying longer. The number of those over 25 with some college or other professional training will increase 25% between 1975 and 1980, to 35 million. An increasing percentage of young adults will attend vocational schools rather than college. Adult education programs will also rise in response to the growing desire for self-improvement, both in learning new hobbies to pursue in leisure hours and in updating and expanding career related knowledge.

-- *Changing Family Relationships.* Marriage relations will continue to change as more women seek to pursue financial and self-expressive goals outside the traditional home environment, either through regular employment or through community activities (by 1980, 45% of wives will be employed outside the home). This will result in a trend toward greater equality of husbands and wives, leading to more sharing of power and duties.

Parent-child relationships will undergo further change, with parents having the resources to allow them to be more attentive to the child's development. At the same time there is a diminishing belief that parents should sacrifice for their children. Owing primarily to better contraceptive technology, each birth is more likely to be planned. Smaller families, combined with expanded knowledge about child development and a greater willingness for both parents to share child-rearing responsibilities, will result in parents spending more money on each of their children. There will be greater individuality among family members, with each member having his own interests and more freedom to "do his own thing".

-- *Growing Concern over "Quality of Life".* Many consumers perceive a linkage between inflation, recession, energy crisis, and a feeling of finite raw material resources; this coupled with an ongoing concern about ecology and "quality of life", may lead to a desire to be less wasteful. This will result in increased concern for the operating efficiency of durable goods, continued interest in basic foods, and more emphasis on durable clothing. However, consumer markets will continue to be large and diverse and there will continue to be a strong demand for products offering genuine convenience and value to the consumer.

-- *Rising Interest in Obtaining Good Value.* Consumers' experiences during the recent recession have further intensified interest in obtaining good value. Continued "high" rates of inflation, better educated consumers, and the increasing publicity given to consumer concerns may help strengthen this new perception of, and demand for, value. As a result, it will be harder to sell products and services which do not have value commensurate with their price. New value perceptions, however, will not focus solely on lower priced items; consumers will still be willing to purchase higher priced items, or extra features, where they feel they are getting commensurate additional value. But as better values are sought more aggressively, it will be more important to provide and effectively communicate good value to consumers.

-- *The "Do-It-Yourself" Trend.* This trend has been reinforced by the desire to save money, but in addition, it helps consumers satisfy a need to feel more independent and self-sufficient. The "do-it-yourself" trend will provide opportunities for new products that offer the consumer increased participation in developing the desired end product and services that assist consumers in doing their own building and repairing.

CONSUMER PURCHASING TRENDS

Many changes in consumers' attitudes and buying patterns are now apparent as a result of the recession, shortages, and high rates of inflation--the challenge for consumer marketers is to determine which changes will be long lasting. The purchasing behavior of families who feel that their standard of living has deteriorated, and those families just "starting out"--for whom this economic stress and uncertainty is a new experience--are likely to be most significantly affected by the recent economic turmoil. Attitudes and purchasing behavior may be changed in some of the following ways: (1) increased planning and saving for the future, (2) more careful planning of menus, purchases and shopping trips--deliberately trying to avoid "impulse" purchases, (3) more price consciousness, (4) greater emphasis on durability and operating efficiency of durables, and (5) more concern with "security".

The more sophisticated shopping techniques that many consumers have developed during the recent period of shortages, inflation, and recession are likely to continue and become more widespread, as consumers, who are increasingly better educated, comparison shop more intensively and become more discriminating in attempting to choose the "right" product for their particular needs. Factual information oriented to helping the consumer understand product attributes and make purchasing decisions will become increasingly more effective. Consumers will continue to receive more help from consumer activists, the media, and state and federal government agencies furthering a climate in which consumers are more likely to seek redress if product performance is not up to their expectations.

Families reduced their expenditures in constant dollars dramatically during the recession, especially for durable goods. Consumer expenditures are expected to return to a more normal pattern for the next five years as consumers make durable purchases that were "postponed"; however, many consumers will look for more quality, durability, and operating economy when they do replace these items.

FOOD TRENDS

Many attitudes toward food have been reinforced by recent economic events. Consumers' interest in the price-quality attributes of food products has intensified; consumers are more carefully planning their purchases to be in close accordance with their needs, doing their food shopping from lists, and trying to avoid impulse purchases. In addition, many consumers are trying to reduce waste by making greater use of leftovers and utilizing smaller serving sizes.

Interest in diet and nutrition will continue to expand as Americans become more concerned about health care in general. Average caloric intake should continue to decrease slightly from its 1971/72 peak, as a somewhat larger average body size is more than offset by demographic changes (i.e., fewer people in the highest calorie-need age segments), and as consumption of lower calorie foods and drinks increases. Consumers will continue to be interested in protein. Currently animal sources account for a majority of protein in the diet, but to the extent that consumer concern with health intensifies and favorable price differentials develop, an environment conducive to increased usage of textured vegetable protein instead of meat will evolve.

The trend toward at-home baking and "cooking from scratch" has benefited from increased interest in "simpler" and "natural" lifestyles, as well as consumers' intense price consciousness. In addition, some consumers increasingly are viewing cooking as a hobby and a vehicle for self-expression, however increasing time pressures and the trend toward more "snack-type" meals should stimulate greater demand for value-oriented convenience food items and portion-controlled prepared foods.

Expenditures for food eaten away from home are expected to increase 10% annually over the next decade (including inflation), with more working wives who want to get out of the kitchen, increasing numbers of young adults and empty nesters, more leisure time, greater travel, and increased affluence. The selective-menu/limited-service segment of AFHE will grow fastest (about 12% annual growth) in keeping with the consumers' rising demand for good food, fast service, and reasonable prices. Convenience foods at home will increasingly compete with restaurants, as more foods require less preparation time and as the penetration of microwave ovens reaches 30% of households by 1985.

After dropping from 20% in 1960, to 15.3% in 1972, total food outlays as a percent of disposable income rose to 17.4% early in 1975. Recent uncertain weather conditions, crop damage, and export demand will likely produce further increases during 1975. But, by the end of 1976, increased food production (assuming normal weather) should build up domestic commodity reserves from present low levels, stabilizing food outlays in relation to income.

RETAILING TRENDS

The retailing environment is expected to continue to change; suppliers will have to be increasingly sensitive to retail trends and react quickly to them. Retailers will assume greater power as they become more concentrated, more diversified, and pursue promotional efforts aimed at enhancing consumer confidence in them. Retailers are expected to try to improve their productivity by: (1) shifting functions to manufacturers as well as customers, (2) requiring more standardized packages to facilitate in-store product handling, (3) improving inventory productivity by reducing unnecessary product duplication and proliferation, (4) utilizing more of the store's vertical space to display and store merchandise, and (5) expand their product offerings to higher margin items. As a result of this increased power and drive for increased productivity, retailers may exert added pressure on suppliers--e.g., making new product introductions more difficult, increasing the importance of good product movement performance, leading to more pressure for discounts, and reducing the manufacturer's lead time for deliveries.

CONTINUED SOCIAL AND GOVERNMENT PRESSURE ON BUSINESS

The consumerism movement is reaching the mature stage, going through a period of consolidation, institutionalization, and professionalization. Activists will continue to call for greater regulation of business practices, but cost-value relationships will be increasingly considered in preparing and evaluating legislation. Such areas as improved product quality, safety, and repairability; substantiation of advertising claims; and better service in handling complaints, repairs, and warranties will continue as focal points of government efforts to assist consumers. Consumers will continue to demand and receive more product information--functional information that is understandable and relevant to them. Government pressure on the food industry is likely to intensify with particular emphasis on product safety and food additives. The usage of some additives is likely to be restricted, while pressure for stricter consistency standards and fuller disclosure of ingredients will intensify.

Attempting to control inflation will require persistent government efforts, resulting in continued government scrutiny of and attempts to influence pricing policies and wage settlements. In addition, the federal government will continue to attempt to lower the unemployment rate and stimulate the economy through increased expenditures without major tax increases, except for social security and possibly energy-related tariffs and taxes. The trend toward government monitoring of hiring, compensation, and promotion policies of corporations and other institutions will continue in response to ongoing pressure for "equality of opportunity". In addition, government regulation of pension policies and on-the-job safety practices will continue.

PLANNING ASSUMPTIONS

In order to assist in the five year Strategic Planning process, the Corporate Planning Department--in conjunction with the appropriate staff departments--is providing selected basic economic and environmental assumptions. It is hoped that the following will promote greater uniformity of basic assumptions among the plans as well as minimize the duplication of effort--enabling more emphasis to be placed on the strategic aspects of the planning process. If you decide to use other assumptions, please note what you have substituted.

- . Real GNP is expected to grow an average of 6% annually during the first 2 years of the planning period as the economy recovers. The GNP assumption is 3% real growth per year for the last 3 years of the planning period.
- . Inflation (as measured by the GNP deflator) is assumed to be 6% annually throughout the 5 year period.
- . The real disposable personal income assumption is 6% per year during the first 2 years of the planning period, and 4% annually during the 1978-80 period.
- . Total energy costs are expected to increase substantially over the next 5 years--although the precise timing of energy price increases will be largely affected by political decisions. For planning purposes, overall GMI unit energy costs are assumed to increase an average of 12% annually (including inflation) during the next 5 years.

Natural gas prices are assumed to double over the next 5 years in current dollars--increasing an average of 16% annually--as price regulations may be phased out and natural gas prices permitted to rise. Because industrial use of natural gas will likely be curtailed, energy costs will increase as more expensive alternatives are utilized.
- . Oil prices are expected to increase 50% during the 1975-80 period or 8% per year; a rate slightly higher than inflation.
- . Composite freight rates are expected to increase 8-9% per year through 1980.
- . Paper and Packaging prices are assumed to increase 10% in FY 1976 and 6% annually thereafter.
- . Employee compensation rate assumptions are 10% for FY 1976, 9% for 1977, and 8% per year for the 1978-80 period.
- . TV advertising cost assumptions are as follows:
 - Child TV up 10% per year.
 - Newstime TV to increase 10% per year for the next 2 years and then experience 4-5% annual increases.
 - Primetime, daytime, and spot TV rates will increase 4, 5, and 6% per year respectively.
- . Magazine advertising rates are expected to rise 6% per year over the planning period.
- . Third class postage rate assumptions are 20% for 1976 and 15% annually thereafter.

There may be other basic factors (e.g., raw material and ingredient costs) that are critical to the foundation of your plan. You are urged to contact the appropriate staff department if you need assistance in developing planning assumptions.

CORPORATE RESPONSIBILITY PLANNING

Unquantifiable considerations are included in the Corporate Plan through a special planning process which is called Corporate Responsibility Planning. This special planning process runs concurrently with the operational planning process, but consumes less total time. Briefly, the process begins in August with several corporate staff departments preparing written objectives and strategies pertaining to their respective areas of expertise. In September, these plans are reviewed in oral review sessions by the same Corporate Review Group which listens to Operational Plans. Out of these oral review sessions, corporate management drafts a statement of major objectives and the strategies for achieving those objectives in the three broad areas of consumer, employee, and societal concerns. This statement is incorporated as a part of the GMI Corporate Plan. A sample of last year's statement is attached.

FOR OUR CONSUMERS

- I. *Enhance consumers' confidence in the corporation and our products; improve credibility in areas of concern which affect our consumers such as inflation, nutrition, product safety, and child advertising.*
- II. *Identify changing consumer wants and needs; market new products and services, and adapt established products and services to meet those needs.*
- III. *Ensure that our products and services fulfill the expectations of consumers; price all products and services so that they will represent fair value to the consumer.*

MAJOR CORPORATE STRATEGIES - CONSUMERS

During the 5-year planning period through 1979, the major corporate strategies to meet the above objectives are to:

- A. Define the scope of key consumer concerns as they affect the corporation, using the family survey or similar information source, and identify potential areas for improvement.
- B. Demonstrate a genuine desire to serve the consumers interests by expanding our corporate role in nutritional education and nutritional research.
- C. Assign each manager primary responsibility for:
 1. Reviewing his products and services from the standpoint of packaging, labeling, safety, quality, ingredients, nutritional value, the content of advertising message, and other areas of strong consumer interest to assure that we are providing industry leadership and genuine customer value.
 2. Reappraising the price-value relationship of his products and services to ensure that we retain a strong competitive position and are in tune with the real consumer value interpretations of the day.
- D. Assure the continued quality of mass communications paying particular attention to minority casting opportunities, wording stereotypes in depiction of women, and the kind of advertising we target at children.
- E. Seek better ways to communicate the positive attributes of our product and services to consumers.

OUR EMPLOYEES

- I. *Provide a stimulating work environment which assures opportunity for advancement and career growth for all qualified employees.*
- II. *Provide innovative, competitive, and equitable compensation and benefit programs to attract and retain high-quality personnel at all levels.*
- III. *Comply with legal and Corporate Affirmative Action requirements and achieve full utilization of minority, female, and handicapped employees throughout the company.*
- IV. *Assure that the management decisions of General Mills recognize the major impact company actions have on the lives of its employees and their families.*

MAJOR CORPORATE STRATEGIES - EMPLOYEES

During the 5-year planning period through 1979, the major corporate strategies to meet the above objectives are to:

- A. On a continuing basis, monitor and evaluate all existing compensation and benefit programs through the Corporate Personnel Department.
- B. Encourage the use of formal performance evaluations and "How Am I Doing" talks for all employees throughout the corporation.
- C. Design and monitor special training programs to improve managerial awareness of the need to establish working relationships and career opportunities that are free of prejudice.
- D. Providing training and developmental programs especially designed to upgrade the potential of minorities and women for advancement.
- E. Develop and support strong local personnel functions to assure objective consideration of company responsibility to employees and society in decision making.
- F. Develop policy guidelines to assure that the handling of personnel matters, such as employee relocation, involuntary termination, and early retirement, recognize and give consideration to the individual situations of the employee.
- G. Develop and encourage the use of counseling programs to assist employees with personal problems, such as alcoholism and financial concerns.
- H. Maintain systematic procedures which will assure effective identification and development of future managers in both subsidiaries and the parent company to fill prospective key vacancies throughout the corporation.
- I. Through the Corporate Industrial Relations and Medical Departments, monitor and assist in developing appropriate medical and safety programs.
- J. Provide investment and savings plans which afford subsidiary employees the opportunity to participate.

FOR SOCIETY

- I. *Maintain a level of social responsibility that in aggregate is comparable with other major corporations.*
- II. *Provide leadership among major corporations in selected priority fields of social responsibility and position General Mills as the clear national leader in one such field.*

MAJOR CORPORATE STRATEGIES - SOCIETY

During the 5-year planning period through 1979 the major corporate strategies to meet the above objectives are to:

- A. Identify and execute a strategy of national leadership in one area of social responsibility.
- B. Increase financial support to projects in the social area with the objective of reaching a minimum of 3% of pre-tax earnings during the planning period, some part of which may represent limited profit ventures in the social area.
- C. Increase our commitment to women and the minority community through:
 1. Achieving and maintaining our objective of 15% of new exempt employees being minorities and 10% being female.
 2. Providing management assistance and capital to and purchasing goods and services from minority businesses.
 3. Giving special attention to minority areas in Foundation contributions.
 4. Seeking minority support for our products and services by encouraging all General Mills operations to consider minority vehicles in their advertising campaigns.
- D. Provide an internal environment which encourages increased involvement in community and public affairs by employees at all levels.
- E. Comply with federal and state air, water, and noise quality standards and promote the conservation of all natural resources throughout General Mills.
- F. Develop by the end of fiscal 1975 a guiding policy outlining areas of opportunity and/or responsibility for General Mills in helping meet world food needs.

HEWLETT-PACKARD

STATEMENT OF CORPORATE OBJECTIVES

The achievements of an organization are the result of the combined efforts of each individual in the organization working toward common objectives. These objectives should be realistic, should be clearly understood by everyone in the organization, and should reflect the organization's basic character and personality.

If the organization is to fulfill its objectives, it should strive to meet certain other fundamental requirements:

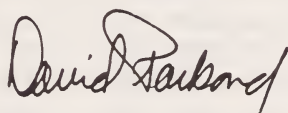
FIRST, the most capable people available should be selected for each assignment within the organization. Moreover, these people should have the opportunity — through continuing programs of training and education — to upgrade their skills and capabilities. This is especially important in a technical business where the rate of progress is rapid. Techniques that are good today will be outdated in the future, and people throughout the organization should continually be looking for new and better ways to do their work.

SECOND, enthusiasm should exist at all levels. People in important management positions should not only be enthusiastic themselves, they should be selected for their ability to engender enthusiasm among their associates. There can be no place, especially among the people charged with management responsibility, for half-hearted interest or half-hearted effort.

THIRD, even though an organization is made up of people fully meeting the first two requirements, all levels should work in unison toward common objectives and avoid working at cross purposes if the ultimate in efficiency and achievement is to be obtained.

It has been our policy at Hewlett-Packard not to have a tight military-type organization, but rather, to have overall objectives which are clearly stated and agreed to, and to give people the freedom to work toward those goals in ways they determine best for their own areas of responsibility.

Our Hewlett-Packard objectives were initially published in 1957. Since then they have been modified from time to time, reflecting the changing nature of our business and social environment. This booklet represents the latest updating of our objectives. We hope you find them informative and useful.



Chairman of the Board



President and Chief Executive Officer

July, 1974

HEWLETT-PACKARD OBJECTIVES

The Hewlett-Packard Company is a leading manufacturer of electronic equipment for the defense, aerospace, and commercial markets. The company's products are used in a wide variety of applications, including radar, communications, and test equipment.

The company's primary objective is to provide the highest quality products and services to its customers. This is achieved through a commitment to excellence in design, manufacturing, and customer support. The company also strives to be a leader in the development of new technologies and products.

The company's secondary objective is to maintain a strong financial position and to provide a high level of return to its shareholders. This is achieved through a focus on operational efficiency, cost control, and effective capital management. The company also seeks to expand its market share and to enter new markets.

The company's tertiary objective is to maintain a strong commitment to the community and to the environment. This is achieved through a variety of programs, including employee development, community service, and environmental protection. The company also seeks to be a responsible corporate citizen in all of its dealings.

The company's overall objective is to be a world leader in the electronic equipment industry. This is achieved through a combination of innovation, quality, and customer service.

1. PROFIT

OBJECTIVE: *To achieve sufficient profit to finance our company growth and to provide the resources we need to achieve our other corporate objectives.*

In our economic system, the profit we generate from our operations is the ultimate source of the funds we need to prosper and grow. It is the one absolutely essential measure of our corporate performance over the long term. Only if we continue to meet our profit objective can we achieve our other corporate objectives.

Our long-standing policy has been to reinvest most of our profits and to depend on this reinvestment, plus funds from employee stock purchases and other cash flow items, to finance our growth. This can be achieved if our return on net worth is roughly equal to our sales growth rate. We must strive to reach this goal every year without limiting our efforts to attain our other objectives.

Profits vary from year to year, reflecting changing economic conditions and varying demands for our products. Our needs for capital also vary, and we depend on short-term bank loans to meet those needs when profits or other cash sources are inadequate. However, loans are costly and must be repaid; thus, our objective is to rely on reinvested profits as our main source of capital.

Meeting our profit objective requires that we design and develop each and every product so that it is considered a good value by our customers, yet is priced to include an adequate profit. Maintaining this competitiveness in the marketplace also requires that we perform our manufacturing, marketing and administrative functions as economically as possible.

Profit is not something that can be put off until tomorrow; it must be achieved today. It means that myriad jobs be done correctly and efficiently. The day-to-day performance of each individual adds to

— or subtracts from — our profit. Profit is the responsibility of all.

2. CUSTOMERS

OBJECTIVE: To provide products and services of the greatest possible value to our customers, thereby gaining and holding their respect and loyalty.

The success and prosperity of our company will be assured only if we offer our customers superior products that fill real needs and provide lasting value, and that are supported by a wide variety of useful services, both before and after sale.

Our responsibility to the customer begins with product development. Products must be designed to provide superior performance and long, trouble-free service. Once in production, these products must be manufactured at a reasonable cost and with superior workmanship.

A prime objective of our marketing departments is to see that the finished product is backed by prompt, efficient service. Moreover, good communication should be maintained with the customer and among various HP sales teams.

Because of our broad and growing line of products, very often several sales teams will be working with a single customer. Each of these teams has a high degree of technical knowledge and sales skill. There must be considerable cooperation among teams to assure that the products recommended best fulfill the customer's overall, long-term needs.

HP customers must feel that they are dealing with one company with common policies and services, and that our company is genuinely interested in arriving at proper, effective solutions to their problems. Confusion and competition among sales teams must be avoided by a clear assignment of sales responsibilities, plus sound judgment by HP

sales people in understanding customer needs and HP objectives.

3. FIELDS OF INTEREST

OBJECTIVE: *To enter new fields only when the ideas we have, together with our technical, manufacturing and marketing skills, assure that we can make a needed and profitable contribution to the field.*

The original Hewlett-Packard products were electronic measuring instruments. Today our product line has expanded to include instruments for chemical and biomedical measurement and analysis, computers to automate measurement and to process the data, as well as electronic calculators and complete computer systems. Thus our growth has led to a continuing expansion of our fields of interest. To a large extent, diversification has come from applying our resources and skills to fields technically related to our traditional ones.

The key to HP's prospective involvement in new fields is *contribution*. This means providing customers with something new and needed, not just another brand of something they can already buy. To meet this objective we must continually generate new ideas for better kinds of products. It is essential that before final decision is made to enter a new field, full consideration be given to the associated problems of manufacturing and marketing these products.

4. GROWTH

OBJECTIVE: *To let our growth be limited only by our profits and our ability to develop and produce technical products that satisfy real customer needs.*

How large should a company become? Some people feel that when it has reached a certain size there is no point in letting it grow further. Others feel that bigness is an objective in itself. We do

not believe that large size is important for its own sake; however, for at least two basic reasons, continuous growth is essential for us to achieve our other objectives.

In the first place, we serve a rapidly growing and expanding segment of our technological society. To remain static would be to lose ground. We cannot maintain a position of strength and leadership in our field without growth.

In the second place, growth is important in order to attract and hold high caliber people. These individuals will align their future only with a company that offers them considerable opportunity for personal progress. Opportunities are greater and more challenging in a growing company.

5. OUR PEOPLE

OBJECTIVE: To help HP people share in the company's success, which they make possible; to provide job security based on their performance; to recognize their individual achievements; and to insure the personal satisfaction that comes from a sense of accomplishment in their work.

We are proud of the people we have in our organization, their performance, and their attitude toward their jobs and toward the company. The company has been built around the individual, the personal dignity of each, and the recognition of personal achievements.

We feel that general policies and the attitude of managers toward their people are more important than specific details of the personnel program. Personnel relations will be good only if people have faith in the motives and integrity of their supervisors and of the company. Personnel relations will be poor if they do not.

The opportunity to share in the success of the company is evidenced by our above-average wage

and salary level, our profit-sharing and stock purchase plans, and by other company benefits.

The objective of job security is illustrated by our policy of avoiding large ups and downs in our production schedules, which would require hiring people for short periods of time and laying them off later. We are interested that each employee carry a full load and be eager to remain with and grow with the company. This does not mean we are committed to an absolute tenure status, nor do we recognize seniority except where other factors are reasonably comparable.

In a growing company there are apt to be more opportunities for advancement than there are qualified people to fill them. This is true at Hewlett-Packard; opportunities are plentiful and it is up to the individual, through personal growth and development, to take advantage of them.

We want people to enjoy their work at HP, and to be proud of their accomplishments. This means we must make sure that each person receives the recognition he or she needs and deserves. In the final analysis, people at all levels determine the character and strength of our company.

6. MANAGEMENT

OBJECTIVE: *To foster initiative and creativity by allowing the individual great freedom of action in attaining well-defined objectives.*

In discussing HP operating policies, we often refer to the concept of "management by objective." By this we mean that insofar as possible each individual at each level in the organization should make his or her own plans to achieve company objectives and goals. After receiving supervisory approval, each individual should be given a wide degree of freedom to work within the limitations imposed by these plans, and by our general cor-

porate policies. Finally, each person's performance should be judged on the basis of how well these individually established goals have been achieved.

The successful practice of "management by objective" is a two-way street. Management must be sure that each individual understands the immediate objectives, as well as corporate goals and policies. Thus a primary HP management responsibility is communication and mutual understanding. Conversely, employees must take sufficient interest in their work to want to plan it, to propose new solutions to old problems, to stick their necks out when they have something to contribute. "Management by objective," as opposed to management by directive, offers opportunity for individual freedom and contribution; it also imposes an obligation for everyone to exercise initiative and enthusiasm.

In this atmosphere it is particularly important that the strength of the whole company is kept in mind and that cooperation between individuals and between operating units is vital to our profitable growth.

It is important for everyone to realize there are some policies which must be established and strictly maintained on a corporate-wide basis. We welcome recommendations on these corporate-wide policies from all levels but we expect adherence to them at all times.

7. CITIZENSHIP

OBJECTIVE: *To honor our obligations to society by being an economic, intellectual and social asset to each nation and each community in which we operate.*

All of us should strive to improve the environment in which we live. As a corporation operating in many different communities throughout the world, we must assure ourselves that each of these communities is better for our presence. This means building plants and offices that are attractive and

in harmony with the community; it means solving instead of contributing to the problems of traffic and pollution; it means contributing both money and time to community projects.

Each community has its particular set of social problems. Our company must help to solve these problems. As a major step in this direction, we must strive to provide worthwhile employment opportunities for people of widely different backgrounds. Among other things, this requires positive action to seek out and employ members of disadvantaged groups; and to encourage and guide their progress toward full participation at all position levels.

As citizens of their community, there is much that HP people can and should do to improve it — either working as individuals or through such groups as churches, schools, civic or charitable organizations. At a national level, it is essential that the company be a good corporate citizen of each country in which it operates. Moreover our employees, as individuals, should be encouraged to contribute their support to the solution of national problems.

The betterment of our society is not a job to be left to a few; it is a responsibility to be shared by all.



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HEWLETT-PACKARD COMPANY
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PALO ALTO, CALIFORNIA 94304

JOHN C. BECKETT
GOVERNMENT RELATIONS MANAGER

December 1, 1975

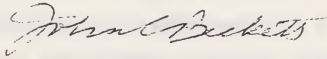
The Honorable George E. Brown, Jr.
Subcommittee on Environment and
the Atmosphere
U.S. House of Representatives
1334 Longworth House Office Building
Washington, D.C. 20515

Dear Mr. Brown:

Enclosed is Hewlett-Packard's response to your letter of October 30, 1975, requesting a written document describing our corporate planning organization and process. We appreciate the opportunity to participate in your study of long-term policy planning and hope that the information we are supplying is helpful.

If you would like more detail or have questions, please let me know.

Sincerely yours,



John C. Beckett

JCB:ac
Encl.

PLANNING AT HEWLETT-PACKARD COMPANY

Planning is an inescapable part of corporate management. Even the decision not to plan is a definitive plan for addressing the future. The general macro planning cycle consists of the following elements:

1. Determine objectives
2. Organize and set policies
3. Hire, train, and deploy people
4. Allocate capital and expense resources
5. Measure, evaluate, and feed back results to modify the first four steps - then repeat cycle.

At Hewlett-Packard the corporate objectives are a comprehensive interactive guide to the direction of the company. They are published and a copy is given to every employee, vital points that are often neglected. The organization has changed many times over the years but is now based on a worldwide product line management principle with similar product lines aggregated into divisions and then into groups to provide management control of a decentralized operation. There is a geographical management overlay to take care of those functions which are uneconomic to provide on a product line basis in some parts of the world.

The Five-Year Plan

Detailed planning is done annually at Hewlett-Packard and looks out five years. This process starts with the sending of planning guidelines, economic forecasts, and a schedule to product line managers in March. Such is the pace of technological change that these plans look ahead for only three years at the product level. The numbers are entered into an HP 2000 time-share system and a program consolidates them at the group level for review and modification. Group management then extends the plan in less detail for two more years to cover

onger lead time items such as land and building acquisition, people plans, etc. These data, together with a narrative description of the salient features of the plan, are sent to the Executive Vice Presidents and the Corporate Planning Department for consolidation and review at the corporate level. Usually a few cycles of review, comment, and modification are necessary before the plans are considered believable and implementable. This is because "bottoms up" planning of this kind tends to be too optimistic in terms of growth and also the cash resources to fund growth are only completely visible at the corporate level.

These plans are reviewed and discussed at the general management meeting in June where over 100 top managers from all over the corporation gather. They are then revised further if necessary. In August the focus changes to the next fiscal year (which starts on November 1) and discussions are held with the field sales force on order quotas. When these are settled detailed targeting of order, shipment, and expense numbers for the coming year is worked out, discussed, compared with econometric forecasts, and finally approved.

The major questions to be settled in this whole process have to do with growth rates and the allocation of people, expense, and capital resources to the various product lines. There are never enough resources to do all of the things that are attractive, and so product and project selection is the vital element in the continuance of a successful, healthy corporation. The analysis includes customer need, technical risk, and the competitive picture, among other items. The product decisions get visibility at the top level annually by means of day-long division reviews.

Longer Range Planning

A second kind of planning that goes on continually but in a less organized fashion looks out 5-15 years. Over this time frame the critical inputs are technology, the economies within which we operate, and the social-political environment. The plans and actions that stem

Planning at Hewlett-Packard Company - page 3

from these considerations include investment in land and buildings, geographic expansion or contraction, and the training and development of a good supply of suitably-trained people.

In answering the specific questions asked:

1. Since the future is uncertain, we aim to keep a financially strong, alert, and agile company with people who can move quickly in response to unexpected developments. We plan carefully but do not adhere slavishly to the plan if circumstances change.
2. Planning is decentralized to the worldwide product lines and is done by the functional management. A small central staff of 3 people (out of 30,000 in the company) organizes the planning system, supplies the economic forecasts and timetable, and does the consolidation. The Director of Corporate Development in charge of the planning system was a division manager himself and relates to line management on a direct personal basis. He reports to the President, William Hewlett.
3. Five years for detailed plans. 5-15 years for technology, plant, and people development. The times were picked because they represent a compromise between the response time of the organization and the accuracy with which we can look ahead. The five-year plan is updated annually and when new substantially-different inputs are received. The longer-range plans are under constant revision due mainly to exogenous inputs.
4. Economic forecasting is done on an econometric model basis. Technological developments and other changes are done by combination of unofficial Delphi and expert opinion. Both methods in the correct context have been accurate and useful.

5. The methods are described in the narrative. The model is computerized on the timeshare and is easy to update. We use alternative or worst case scenarios as seems necessary but not as routine. A strong financial posture together with alert, well-trained management is the only method we know that can hope to respond to "the slings and arrows of outrageous fortune."
6. Law, technology evolution, geo-political attitudes, and people's aspirations are among the many considerations. The corporate objectives are a good guide to many of the unquantifiable factors.
7. Written, communicated, and widely distributed pragmatic objectives appear extremely rare in business and government and yet are vitally useful. A timeshared interactive model is very convenient and allows the testing of alternative scenarios. Detailed planning much beyond three years was unsuccessful.
8. Clear and consistent objectives could be developed for each department and communicated to the employees. An inexpensive interactive data base for alternative scenarios could be tried so that "what if" questions can be easily answered. Non-political economists might be used to produce more accurate unbiased economic forecasts and hence econometric models.

John L. Doyle
December 1, 1975



Armonk, New York 10504

Office of Vice President

December 3, 1975

U. S. House of Representatives
 Committee on Merchant Marine
 and Fisheries
 Room 1334, Longworth House Office Building
 Washington, D. C. 20515

Attention: Mr. Robert L. Leggett, Chairman Subcommittee
 on Fisheries and Wildlife Conservation and
 the Environment

Mr. George E. Brown, Jr., Chairman Subcommittee
 on Environment and the Atmosphere

Dear Mr. Leggett and Mr. Brown:

In response to your letter to Mr. John R. Opel of October 30, 1975, I am enclosing a written statement describing IBM's planning system. This statement provides our answers to your questions 1-6 within the context of the overall system description.

We do not feel that we can answer your other two questions:

Question 7: What is innovative about IBM planning?

While we have a general understanding of corporate planning practice in the United States, we cannot judge what may be our own innovations as against those by other firms, universities or governmental agencies.

Question 8: What is adaptable for use by the Federal Government?

Better than anyone else, you understand the complex problems with which you grapple and the political and institutional context within which solutions can be found. Therefore, we feel that only you can determine what is adaptable.

If we can be of further assistance, please call on me.

Sincerely,

P. M. Foley

/h

cc: Mr. J. R. Opel

PLANNING IN THE IBM CORPORATIONOVERVIEWNature of Business

The IBM Corporation develops, manufactures, markets and services a wide variety of information-handling products. Most of these products fall into three business areas: Data Processing (DP), the products making up the larger scale data processing systems such as the System 370; General Systems (GS), those for the smaller scale data processing system such as the System 3, as well as sensor-based systems such as the System 7; and Office Products (OP), including typewriters, copiers and other products used in the office. The remaining IBM activities deal with advanced technology and special systems to meet the needs of the United States Government; with disk packs, data modules and supplies used in information-handling systems; and with educational materials and services for schools and industry.

IBM does about half of its business outside the United States. The scale of our operations worldwide is reflected in these 1974 data:

Gross Income from	
Sales, Rentals and Services	\$12.7 billion
Total Assets	14.0 billion
Number of Employees	292 thousand

Organizational Philosophy

Insofar as planning is concerned, IBM's philosophy of organization is implemented as follows:

- a. IBM activities are grouped into a number of operating units which, where feasible, have profit/loss responsibility. These units are differentiated by business area and geographic region, and have the range of functions needed to conduct their assigned missions as autonomously as practical.
- b. Operating unit management is responsible for development and implementation of its plans. Prior to implementation, plans are reviewed and approved by Corporate management. Performance against plan is measured and controlled by operating unit management, and monitored by the Corporate staff. Periodically, the results of operations are reviewed with Corporate management. Plan changes, as necessary, are also reviewed and approved by Corporate management.
- c. Business policies are controlled at the Corporate level, and provide the broad framework within which all operating units function.
- d. In its review and assessment of the operating units' plans and performance, Corporate management is assisted by the Corporate staff which provides counsel and performs certain centralized services.

IBM Structure

The organizational structure of IBM is given in Figure 1. Shown in shaded form, six operating units involved in the three major business areas have been assigned missions as follows:

- a. Data Processing Complex (DPC) - For the DP business area, DPC has responsibility for coordination of market requirements and development of products worldwide, and for manufacturing, marketing and service within the U.S.
- b. General Systems Division (GSD) and Office Products Division (OPD) - For the GS and OP business areas respectively, GSD and OPD have responsibilities worldwide and within the U.S. which are analogous to those of the DPC.
- c. Europe/Middle East/Africa (EMEA) and Americas/Far East (AFE) - For the DP business area, EMEA and AFE have responsibility for manufacturing, marketing and service within their respective geographic regions. For the GS and OP business areas, they have responsibility for marketing and service in the smaller countries.
- d. General Business Group International (GBGI) - For the GS and OP business areas, GBGI has responsibility for giving functional guidance for manufacturing, marketing and service within the larger countries outside the U.S.

There are strong dependencies among these six units and some degree of overlap among the three business areas. Consistent with our philosophy of decentralized management of operations, the planning and control system requires the designated units to develop and implement their separate but coordinated plans within an integrated Corporate framework.

2. THE BASIC PLANNING PROCESS

Dealing with Change

Information handling products are used across the entire spectrum of human activity and in every part of the world. The number and scope of product applications are expanding rapidly, being limited only by the creativity which the users and firms like our own bring to bear on solving information problems.

Continuing and rapid change is, therefore, inherent in our business. Technology is advancing rapidly; competition is intense; the world economy is in flux; governmental actions often affect the business environment; and societies everywhere are moving through an "age of discontinuity." Expecting change and recognizing that it may take many forms, IBM scans the environment through two organizational mechanisms -- one being the operating units affected and the second the Corporate staff.

Operating unit management maintains an awareness of emerging problems or opportunities which may affect its business. Concurrently, within their respective areas of functional expertise, the various Corporate staffs are also monitoring change. When an event or trend of potential significance is detected (e.g., slackening of economic conditions in a country we serve), the operating unit affected will alert Corporate management as to the magnitude and timing of the expected effects. In some cases, the unit is joined by the Corporate staff in developing and recommending a course of action. Once accepted, these recommendations are then built into the unit's plan by its management. Where a problem is of major and continuing importance (e.g., energy), a joint council involving affected units and staffs will be created to monitor and recommend action on a regular basis.

Organizing for Planning

The planning and control system pervades the entire IBM organizational structure. It serves as a primary communication link between Corporate and operating unit management for establishing unit objectives and strategic direction, negotiating plan commitments and measuring performance against plan. The bulk of the planning done within IBM is not only decentralized into the several operating units, but within any given unit, planning is further decentralized to the plant and laboratory levels.

As indicated at the outset, planning and implementation are line management responsibilities. However, planning staffs to support line management exist at the Corporate, operating unit (and where these are large, at the divisional or country) and plant/laboratory levels. The size and functional mix of these staffs depend on the specific responsibilities of the line managers they support. At the operating unit level, the executive will normally have finance and planning, as well as the functional skills needed to develop a properly balanced profit plan. For example, his technical staff will review and assist in integrating the various product plans into the unit plan. The unit executive makes the final judgments as to business volumes to be achieved, resources required and risks to be accepted.

At the Corporate level, the line executives also have finance, planning and other functional staffs to assist them. For example, among the responsibilities of the Corporate Business Plans staff are design of the IBM planning system, establishing plan guidance and data requirements, managing the plan schedule, recommending profit targets for the various operating units, and reviewing and assessing their strategies and plans.

Program and Period Planning

There are two distinct but interactive kinds of planning within the IBM system as shown in Figure 2 (light outline for program planning; bold, for period planning):

- a. Program planning (e.g., a program to develop a product or improve the productivity of a function) is characterized by the following: The program plan generally has a single objective, but

may involve several functional elements. Its time horizon is determined by the nature of the specific program objective and the work processes required to achieve it; its cycle for review and decision-making, by the inherent dynamics of the program.

At any point in the time, each operating unit has a large portfolio of product and functional programs in various stages of planning and implementation.

- b. Period planning complements program planning and is characterized by the following: The period plans balance among multiple program and other objectives to achieve the profit targets assigned. Its time horizons are fixed by Corporate management, being 2 years for the operating plan and 5 years for the strategic plan. The cycle for review and decision-making is tied to the calendar to assure the availability of an operating budget for each unit at the beginning of each year.

Clearly, decisions made as part of the period planning process affect the program plans -- accelerating some, terminating others and so on. The converse is also true -- some program decisions require changes in the period plan of an operating unit. It is the responsibility of operating unit management to establish and maintain the proper balance among its objectives and resources,

3. PROGRAM PLANNING

Product Management

Program planning may be directed toward a system, product, industry (i.e., a specific class of customers) or functional objective. To illustrate the process, we consider the planning associated with a product program. Such planning generally proceeds in two distinct stages: defining the market requirements and, once the requirements have been accepted, translating them into products.

In most cases, the market requirements relate to an existing IBM product, one for which there has been a continuing need. As part of his normal activities, the manager within an operating unit having responsibility for a certain product will periodically measure the performance versus program plan for the product he currently has in the field. Concurrently, he will be proceeding with the development of advanced techniques and devices for the next generation product. Depending on the sales performance of the current product and the availability of new technology, he will recommend to his management whether and how to enhance or replace it. Since many of our products work together within a data processing system, the product manager's recommendations must always be considered within the total systems framework -- systems integrity must be maintained.

In some cases, a customer's needs may be basically new, lying somewhat beyond IBM's current skills and experience. Product planners will then work with the marketing force on case studies, interviews and questionnaires to determine the users' requirements, the functional characteristics needed in the new product and its expected mode of use. Depending on the prospects for an economically sound program, the product manager will make his recommendations as to proceeding with it.

At its discretion, operating unit management initiates programs which fall within the assigned missions, approved strategies and negotiated organizational budgets of the unit. Once initiated, the management periodically reviews performance against program plan. These reviews typically occur as the product program moves from one phase into the next (e.g., from study into design). The product manager reviews all aspects of the program (e.g., forecasts of business volumes, cost estimates, technical problems, schedules, etc.) with the operating unit management, and with all functions and operating units having an interest in the program. Prior to product announcement, there must be agreement as to its economic soundness, and commitment from each organization to do its part. After announcement, there are periodic reviews of performance against plan, with corrective action taken as necessary.

Forecasting

IBM relies on in-house econometric models to forecast both the U.S. economy and the demand for certain of the company's products. The same techniques are now being used for international forecasts. Economists in the major countries work with the Corporate Economics Department to assure proper reflection of the local situations.

The company uses two national income and expenditure models in its forecasts of the U.S. economic picture. The quarterly model produces forecasts for use with the company's two-year operating plan; the annual model produces forecasts for use with the strategic plan. IBM also uses an input/output model to project industry supply and demand patterns. The first two models each contain about 50 behavior equations, each one relating to some economic variable such as the consumption function of durables. The programs are written mainly in Fortran and run on 370/155s and a 360/91.

Product forecasters in each operating unit use a wide range of forecasting methods including analyses of growth and replacement patterns for new product or systems; extrapolation from a sample of case studies selected to represent industry, size or application distribution; interviews or questionnaires for new products; and projections based on sales or backlog analyses for products already announced. Through the use of typical system configuration ratios, systems forecasts are decomposed into forecasts of the individual products comprising them.

4. PERIOD PLANNING

An overall planning system is necessary to meet the business needs of the Corporation and its operating units. In this system, each IBM operating unit annually performs both strategic and operating planning. The purpose of strategic planning by a unit is to establish its business direction; that of operating planning, to implement the direction within budgeting requirements and commit the unit to achieving planned results.

Strategic Planning

Key elements in strategic planning are Corporate targets, operating unit goals, product/system and functional strategies, and a strategic plan. The five-year time horizon for strategic planning lies sufficiently beyond the two-year operating period so that sound and timely decisions on business direction can be made. The strategic process is as follows:

a. Corporate Targets and Operating Unit Goals

Corporate management assigns targets (profit and profit margin) to each operating unit. In response, each operating unit management develops and assigns goals to its product/system and functional management to guide their strategy development.

b. Strategies

Operating units with development responsibilities prepare and maintain product/system strategies to serve as the foundation for their marketplace offerings. All units prepare functional strategies to assure that the most effective organization and business approaches are used to achieve increasing productivity of resources. As part of its marketing strategy, a unit may assign industry goals and develop strategies to meet the needs unique to specific customer sets.

c. Strategic Plan

The strategic plan integrates the several product/system and functional strategies of the unit, presents the financial results over the plan period and compares planned results against Corporate targets. This plan (and selected strategies) is submitted to the Corporate Management Committee (CMC) by the operating unit executive. The plans are reviewed by the Corporate staff and, prior to CMC review, their assessments are forwarded to the CMC and the operating unit. Among the bases for these assessments are:

- Consistency with approved strategic direction.
- Balance between objectives sought and resources required.
- Relationships to plans of other operating units.
- Excellence in each functional area.

Certain staffs also write short critiques as to the strengths, weaknesses or risks associated with the individual plans. On the basis of these staff inputs and the operating unit presentation, the CMC approves the unit's proposed business direction, resolves nonconcurrences, reevaluates its targets and reassigns them.

To support this planning work, the operating units with product development responsibility generate product assumptions; Corporate Economics provides the economic and environmental assumptions; and the various Corporate staffs issue functional guidance as necessary. Other factors and trends are monitored and analyzed to determine their possible implications (e.g., environmental issues, consumerism, privacy and data security, and international political and economic relationships).

Using the product and economic assumptions, the forecasting department of each operating unit produces an overall set of business volumes by integrating the individual product forecasts previously developed with the results of the supply-demand balancing against the order backlog. These volumes provide management with a projection based on explicitly defined and quantifiable factors. Management then applies judgment to take into consideration the unquantifiable considerations previously mentioned, and the adjusted business volumes are distributed to the various functions as the basis for their plans. Based on historical experience, each function then uses its own planning factors and models to translate these volumes into workload, resources and cost/expense. Computer models are widely used at both the operating unit and Corporate levels. For example, all manufacturing activities use computers extensively for balancing supply against demand and determining plant loadings; engineering, for design automation; marketing and service, for territory analysis and proposal preparation. The unit staff then integrates the several functional inputs into a properly balanced plan; the unit executive approves and submits it to Corporate management.

As one approach for dealing with the problems of uncertainty, Corporate management may request contingency analyses to test, for example, the effect of a more extreme set of economic assumptions on unit plans. Corporate Economics will then issue two outlooks -- one for the base plan and a second for the contingency plan. Operating units will then develop two plans and review them with Corporate management. This approach has proven useful in improving the speed and flexibility of our response to unanticipated conditions.

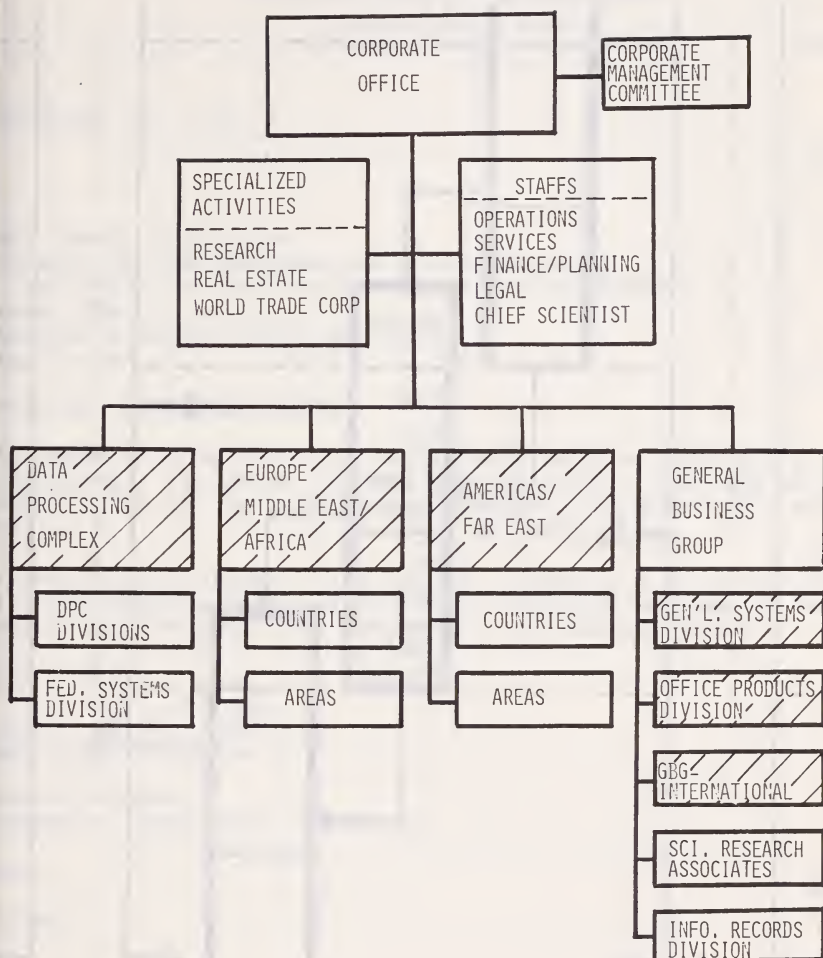
OPERATING PLAN

Based on the business direction in the approved strategic plan and including changes as necessary, the unit then develops an operating plan which focuses on implementation over the current year plus two. This plan contains detailed business volumes and workload forecasts, as well as functional resource and financial plan commitments. These

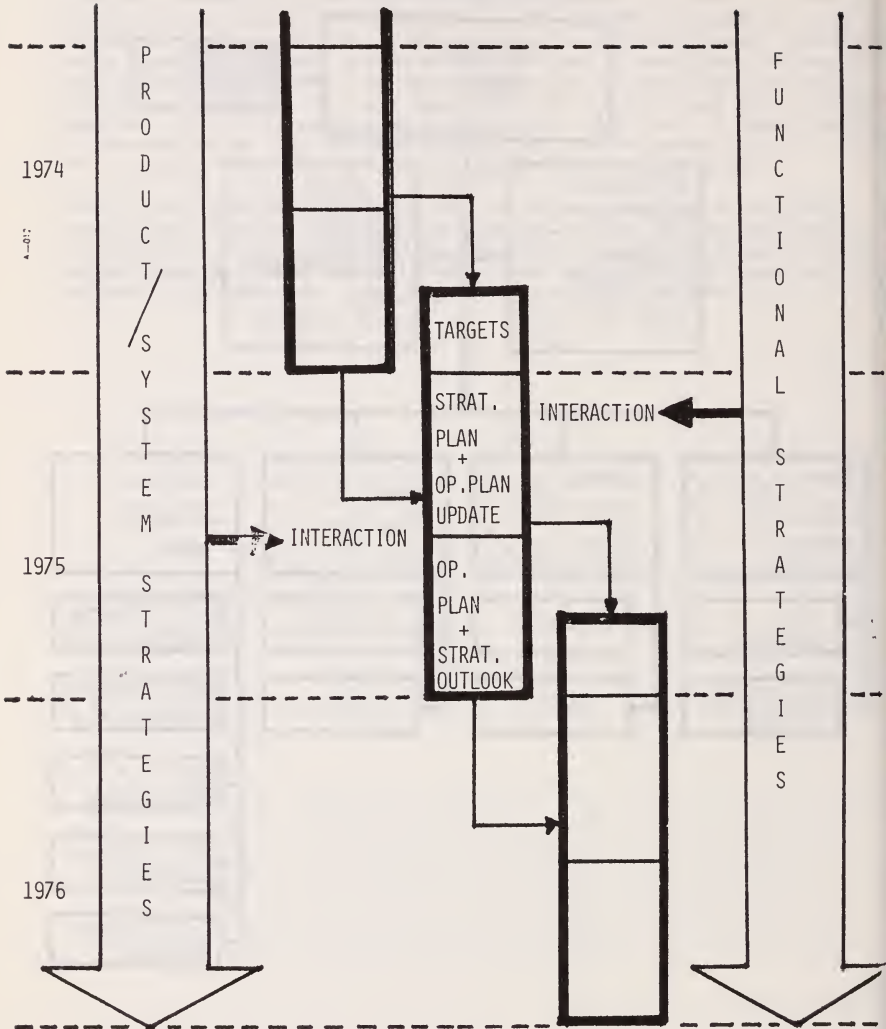
data are developed through planning processes similar to those for the strategic plan described above. The operating plan is used to establish budgets and other objectives for the next year. Certain units provide selected revenue and resource items in a long-range outlook at the time of the plan submission to show the probable extended effects, risks and exposures of the proposed plan. After approval by the operating unit executive, the plan is submitted for Corporate review and assessment (as for the strategic plan). The CMC resolves nonconcurrences and approves the unit plan.

When significant deviations occur in actual results versus plan, a unit may request approval for changes in its operating plan. All requests are coordinated by the IBM Director of Budgets (and, indeed, may be initiated by him); those requiring CMC approval are reviewed and assessed by appropriate Corporate staffs.

STRUCTURE OF IBM



PERIOD AND PROGRAM PLANNING IN IBM



THE PILLSBURY COMPANY

608 SECOND AVENUE SOUTH
MINNEAPOLIS, MINNESOTA 55402

November 20, 1975

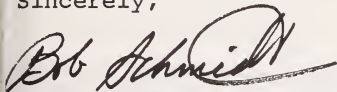
Mr. James W. Spensley
Counsel to the Subcommittee on Fisheries
and Wildlife Conservation and the Environment
Room 1334
Longworth House Office Building
Washington, D. C. 20515

Dear Mr. Spensley:

Enclosed is a written statement responding to your eight questions. If, after reading the statement, you wish us to participate in the session on December 11, please give me a call.

I am also enclosing a copy of our Strategic Planning Manual. I would appreciate it if you would restrict the use of this manual to the staff and members of the subcommittees.

Sincerely,

A handwritten signature in dark ink, appearing to read "Bob Schmidt", with a stylized flourish at the end.

Robert Schmidt
Director, Long Range Planning

Encl.

RS/pcb

STATEMENT TO: HOUSE COMMITTEE ON MERCHANT MARINE AND FISHERIES.

SUBCOMMITTEE ON FISHERIES, WILDLIFE CONSERVATION AND
THE ENVIRONMENT.

HOUSE COMMITTEE ON SCIENCE AND TECHNOLOGY.

SUBCOMMITTEE ON ENVIRONMENT AND THE ATMOSPHERE.

INTRODUCTION

As a spokesman for The Pillsbury Company, I would first like to commend the members of these two subcommittees and their chairmen, Congressman Robert L. Leggett and George E. Brown, for initiating this exploration of the applicability of corporate planning techniques to improving long-term Federal policy planning. Too often, the private sector is seen as part of the problem rather than as part of the solution. Your invitation is a welcome exception to that rule, and we appreciate this opportunity to contribute what we can to your study. We will attempt to follow as closely as possible the eight questions addressed to us by the members of the two subcommittees.

Question #1: How would you describe your organization's overall philosophy and approach to coping with changing business environments and with the uncertainties of the future? How do your corporate planning activities reflect your philosophy and approach? (Please relate your discussion of this question to the types of products and services your enterprise offers.)

Reply: The principal reason for strategic planning is to insure intelligent and economic resource allocation. Most young or small businesses can get by without a formal planning system. Their choices are too few, their options are more dictated by circumstances, and their success or failure resides more clearly in the hands of a few entrepreneurs. But a random walk down the corporate path is no way to run a

billion dollar company. The choices are too many, we find we can control circumstances as often as they control us, and there are many decision makers whose success or failure are intertwined with one another.

To give you some examples, the Pillsbury Company began in 1869 as a flour milling company. This was an era when most food processing was one step removed from basic agriculture. However the food industry has undergone considerable evolution since 1869, due to changing consumer tastes and lifestyles, changing agricultural techniques, shifts in transportation, new technologies and so on. Pillsbury has evolved with the industry, and today we manage over a dozen semi-autonomous divisions which, in turn, can be broken down into many sub-divisions or departments. The following is illustrative of the philosophy which governs our approach to business conduct.

The Pillsbury Company is a U.S.-based, multinational corporation serving a number of constituencies.

We serve the public by our efforts to satisfy unmet needs for goods and services, in a variety of markets, on a fair and competitive basis.

We serve our investors by operating in a manner which protects and expands that portion of their wealth over which we have stewardship.

We serve our employees by guaranteeing their health and welfare, and that of their dependents, through fully competitive incomes, benefits, and working conditions.

We serve the communities in which we operate by our efforts to improve the quality of life there, above and beyond what is legally required of us.

We serve our independent suppliers and distributors, as they serve us, by operating in a manner which strengthens our mutually beneficial relationship on a fair and competitive basis.

Our efforts and activities are concentrated in three basic segments of the food industry: Agribusiness, Food Processing, and Restaurants/Foodservice.

OBJECTIVES

Our Broad Corporate Objectives Are:

- * To be a quality company in all respects - people, products, facilities, and business conduct - which means:
 - Attract quality people and provide a variety of opportunities for personal growth and development.
 - Achieve a level of product quality better than our principal competitors.
 - Develop low-cost facilities while complying with regulatory standards for health, safety, and the environment.
 - Maintain the highest ethical and legal standards.
- * To concentrate our efforts on opportunities in food-oriented and food-related businesses, building on our existing bases in Agribusiness, Food Processing, and Restaurants/Food-service by investing in those parts of these businesses which are healthy and growing.
- * To act with a strong sense of corporate responsibility, recognizing and accepting our obligations to our shareholders, our employees, our customers, and to society.
- * To be among the leaders in all product categories and markets in which we compete, which means being one of the top three in terms of market share, with a chance to be number one or a strong number two.
- * To be a market-oriented company in all segments of our business, which means organize our resources to respond, with products and services, to customers' real needs.
- * To concentrate on significant, meaningful opportunities, opportunities which offer a consistent stream of re-investment opportunities at above average rates of return.
- * To grow and earn at above average rates, measuring our success against the best companies in each of the several business segments where we elect to compete.
- * To be international in scope, expanding into foreign markets on the strength of technologies or expertise acquired in our domestic operations.

Most people think of Pillsbury as a flour miller and cake mix company, but we also have substantial commodity merchandising businesses, a major refrigerated foods company, a large restaurant business in our Burger King subsidiary, an important group of international subsidiaries, a fair sized foodservice operation, and a variety of new businesses and ventures in frozen foods, restaurants, wine, floral products and various support businesses. As you can see, we have chosen to concentrate our efforts on the food industry, which is where we think our expertise lies, but this still leaves us a very broad range of alternatives and choices.

Contrary to the popularly held view, the resources of the large corporation are not unlimited, and our managers consistently present us with more alternatives than we can, or indeed should, select. Intelligent and economic resource allocation is the key to managing these choices, and strategic planning is the method by which we insure intelligent and economic allocation of scarce resources. Customarily this means capital resources, although increasingly we are facing choices on other resources such as manpower, technology, advertising, etc.

Before turning to the question of how Pillsbury organizes for planning, there are a number of assertions we make about planning which become part of our overall philosophy and approach to coping with change:

- 1) The process of planning is probably more important than the product (the plan). We do not really plan in order to arrive at a single road-map for the future. To cite the Koran, "There are many mountains up to heaven, many roads up each mountain." Rather than a road-map, the planning exercise should be looked upon as a learning exercise.

- 2) Planning is the process of identifying the parameters of the environment in which we operate and then defining goals and identifying, analyzing and selecting alternatives to accomplish these goals within the dimensions of a given environment.
- 3) Our knowledge of this environment is partial and may grow over time, and the environment is changing. It is a necessary element of the planning process to monitor the environment, plan continuously, and update plans regularly (annually).
- 4) Strategic planning must be distinguished from planning of a more operational nature. The type of alternatives examined is the distinguishing characteristic. Strategic planning attempts to determine basic directions, not detailed operating or tactical programs.
- 5) At Pillsbury, knowledge, resources and decision-making are decentralized. Strategic planning is similarly decentralized and is practiced throughout the organization. The plans are written by the people who must carry them out; the Planning Department is merely a catalyst to facilitate and structure the planning process.
- 6) Documenting plans in written, narrative form is a crucial requirement for effective planning. The narrative form facilitates a comprehensive review of the rationale for the plan and the salient strategic issues. The document also forms the basis for monitoring the plan and for the review and reassessment which is the beginning point for each new (updated) plan.
- 7) Finally, we ask that plans: Be internally consistent; be consistent with marketing opportunities; be appropriate in light of available resources; be candid in their assessment of strengths and weaknesses; be explicit

in their assumptions about the competitive (social and economic) environment; be workable; embrace a degree of risk and rate of return satisfactory to the Board and Executive Office.

Question #2: How is your enterprise organized for planning? What planning functions are assigned to the central management of the corporation? What planning functions are assigned to the line divisions? How do the "planners" relate organizationally to those in the executive decision-making chain? to your board of directors? How does central planning relate to line division planning and action?

Reply: This brings us to the planning system itself. For the most part, formal planning as an ongoing management activity is a post-World War II phenomenon. It was during this period that a number of corporations discovered that they were large enough to influence trends rather than simply follow them and that the economy could be expected to expand in reasonably stable fashion. For a decade or more, planning was largely intuitive and, some would say, largely ignored. During the next ten years, planners learned the "cookbook" approach to planning, i.e., techniques and instructions for making planning more effective. In the past five years computer simulation models have become popular, but, so far, they proven more interesting than accurate.

We feel that simulation models will continue to be unreliable as long as we remain in an economic and social environment characterized by great uncertainties and major discontinuities. Consequently Pillsbury relies on a "cookbook" approach to planning which stresses identifying alternative or contingency strategies along with frequent (annual) updates in the plans. A copy of our cookbook, otherwise called the Strategic Planning Manual, has been provided for the internal use of the members of the subcommittees or the staff. Some additional comments may help clarify how we are organized to execute the planning process in conjunction with the manual.

As indicated above, Pillsbury does have a Planning Department, but this Department does not write the plans. The operating divisions write long range strategic plans which they submit to the Executive Office and, thereafter, Board of Directors for approval. The role of Pillsbury's Planning Department is to administer the process and act as catalyst to facilitate the interaction between the operating divisions and Pillsbury's Executive Office. A comparable situation in the Federal Government is found in the Office of Management and Budget which facilitates the approval of agency budget proposals by the White House for eventual submission to Congress. The analogy is not completely correct since Pillsbury's strategic plans, once approved, are followed by more specific, more detailed annual plans. We understand the Office of Management and Budget to be more concerned with annual budgets than they are with long range strategic plans.

In any case, Pillsbury's Planning Department initiates the planning process in September of each year by providing the operating divisions with the Strategic Planning Manual. The manual contains the formats, instructions, and timetable which the operating divisions use in writing their plans.

At the same time, the Planning Department issues a set of common economic and environmental forecasts for use by all the operating divisions. It does us no good to have one division draft a plan which assumes wild prosperity and have another draft a plan which assumes economic catastrophe. Such plans would not permit us to evaluate the two different operations as equal competitors for the limited supply of scarce resources (capital in our case, probably tax dollars in the Government's case).

Thus, in addition to designing the planning system, the Planning Department must bring together a consistent set of economic and environmental forecasts.

Plans are drafted by the operating divisions and returned to the Planning Department some six weeks later, where they are consolidated and reviewed. The consolidation is necessary if individual plans are to be reviewed in light of the total resources available and the total resources sought. This is the one step in the planning process where we make use of computers, that is, the computer performs the task of summarizing the financial projections of the several operating divisions into a total picture of the corporation.

Cookbook approaches to planning can vary considerably in the degree of autonomous action they permit the operating division managers. Some are highly controlled, "rote" systems where the manager inputs a series of strategic assumptions, and the format dictates what his priorities and strategy (spending level) will be. At Pillsbury, we eschew a rigid system for determining priorities because we want to encourage maximum creativity and initiative in the development of strategic alternatives. However, there is a price to pay for permitting this latitude, and the price is the amount of review it necessitates during the approval process.

The Pillsbury Planning Department performs the first review of the plans and attempts to summarize critical strategic issues for the Executive Office. This is followed by a series of meetings between the members of Pillsbury's five man Executive Office and the general managers of each operating division. It is at these meetings that the individual plans are approved or are

returned for revision. Once approved and/or revised and approved, the Planning Department prepares a summary or Corporate Strategic Plan, and it is this summary which is submitted to the Board of Directors for their approval (usually in March).

At this point, the Planning Department begins preparations for the next year's cycle. The operating divisions go on to prepare a detailed annual budget within the bounds of the first year of the long range plan, but the responsibility for this activity is carried by the corporate controller not the Planning Department.

Question #3: Within what time frame does your corporation conduct its planning? one year? five years? ten years? longer? Why was your time frame selected? How is long-range planning in your enterprise related to operational, relatively short-range planning and decision making? How frequently is your planning reviewed and updated? Is plan revision conducted on a periodic basis, or is it triggered by events or by new information?

Reply: The Pillsbury Company uses a combination of time frames for its plans. The time period for the overall long range plans is five years. For practical purposes this time frame applies to broad strategic directions (what kinds of businesses do we want to be in?) and to capital spending and R & D programs. We select a shorter three year time frame for our marketing plans and a one year time frame for our detailed annual budgets.

These general time frames seem to fit the nature of the businesses in which we operate. Pillsbury is not in capital intensive businesses such as oil, transportation, or chemicals. Nor are we in technologically dependent fields as are the computer, electronic, or communications companies. Indeed, our dependency on agricultural markets, which are subject to the vagaries of

weather conditions, makes it difficult to plan long term for large segments of our business. The selection of three and five year planning periods also permits us to balance such things as our capital and R & D programs with the relatively short product life cycles in much of our business.

Thereafter there are the exceptions. Certain issues do not comfortably fit within the three and five year time frames. The industry life cycle of the fast food restaurant may be one such example, or compliance dates mandated by legislative or legal actions. In these cases, the operative planning horizon is that which circumstances require.

Question #4: What forecasting methods do you use? How would you evaluate their utility? How successful have they been in helping you prepare to meet emerging aspects of the business environment?

Reply: Pillsbury relies extensively on outside forecasts which we then adapt to our internal needs as required. For example, in preparing economic forecasts, there is a wide variety of excellent services available, and it would be redundant and expensive for us to duplicate their efforts. Some outside forecasts are available at little or no cost from our bankers. Others are available at fees ranging upwards of \$10,000.00 a year depending on the sophistication and detail provided by the service. We customarily subscribe to at least one of these expensive services and supplement it with our own judgements.

Similar services are available which measure trends in values and lifestyles, industry competitive trends, menu and dietary preferences, etc. We also rely extensively on trade association reports and government

statistical surveys. Independent research groups and educational institutions also provide a consistent stream of trend information and data on a variety of subjects.

One area where we have found it necessary to establish our own internal forecasting capability is in the agricultural commodities area. However, much of this effort is, of necessity, short run in nature, and the emphasis is on intelligence gathering rather than forecasting techniques.

Question #5: What planning methods do you use? contingency planning? best- and worst-case scenarios? computerized planning models that can be frequently updated? others? Please describe your methods fully. In your judgment, which methods are best suited for handling the problem of uncertainty and the problem of rapid and sometimes surprising changes in the business environment?

Reply: For the most part we have relied on the expedient of "surprise-free" forecasts and have written plans which seek to take advantage of opportunities presented in these forecasts or protect against hazards identified therein. In spite of the disruptions we have seen in the past several years, there are more continuities in society than discontinuities, and the surprise-free forecasts and plans tend to be useful as base plans or most-likely estimates. The other thing to be reiterated here is that Pillsbury revises its plans annually and, by planning often, we are in effect going through a modified form of contingency planning.

We do attempt to stress preparation of alternative or contingency plans more today than we did in the past. Since our base plans tend to be focused on surprise-free, relatively optimistic scenarios, any alternative or contingency plans tend to be fall-back plans.

To date we have not made extensive use of computerized planning models in our long range planning, although we have some sophisticated models to assist in our day-to-day planning. For example, Pillsbury currently operates eight flour mills around the country. As wheat prices, wheat protein content, transportation rates and other conditions shift, the computer optimizes our production across the eight facilities. However, we do not consider this to be contingency planning, but rather one of the requirements for competing in an unpredictable market. From the standpoint of strategic planning, computer models tend to be more time-consuming and troublesome than they're worth. They also tend to substitute the judgement of the model builder for the judgement of the operating manager, and this can be potentially disastrous.

Question #6: What factors other than economic factors do you systematically consider as part of your planning process? How do you include unquantifiable considerations in your corporate strategic planning?

Reply: As mentioned earlier, we attempt to forecast a variety of social, legislative, competitive, and other trends, all of which can be as significant as economic factors and many of which are unquantifiable. The technique for incorporating such qualitative elements in the planning process is to force the operating manager to go through a logical progression as he formulates the plan, listing these external trends, listing the likely impact on his business and then formulating an appropriate business strategy to respond.

Clearly, the operating manager is responsible for identifying many of these trends himself. I refer you back to an earlier statement that, at Pillsbury, knowledge, resources and decision-making are decentralized. Plans are

written by the people who must carry them out, and they must identify external trends as well as plan for them.

Question #7: What do you believe is innovative in your approach to corporate planning? Which innovations have been successful? Which have been less than successful but have presented valuable lessons for your corporate planning process?

Reply: There is probably little here which deserves to be called innovative, though the stress on decentralized planning and the absence of a large corporate staff group in the planning area (customarily three managers) may be viewed as different by some. Also, we tend to rely on outside forecasting services and/or specialists inside Pillsbury (whose involvement in planning is very limited) more heavily than some professionals would recommend.

The system has been highly successful in terms of presenting management with more options than the Corporation can prudently fund, and this, after all, is its principal purpose.

However, we have not been completely successful in our review process. We ask our operating divisions to supply us with highly detailed plans, but we do not respond to them with detailed critiques and analyses. In this regard, the manpower limitations in the Planning Department should be read as a liability rather than an asset.

We have also done a poor job in educating our managers and teaching them to become better planners. From the Executive Office on down, we do not adequately understand what we want strategic planning to do for us. Pillsbury simply hired a long range planner and began to plan one day.

have not gone to operating managers and said, "This is what planning can do for you, this is why we plan the way we do, and these are the questions we expect to have answered when we are through."

Our own operating managers have told us that they do not know enough about what is expected of them and what the Executive Office views as acceptable performance standards. We have done more work lately to provide a framework within which operating managers can plan for their own division, including statements on the Corporate Mission, financial goals, qualitative objectives, environmental concerns, etc. However, we still have to improve this aspect of our planning.

Finally, outside consultants have told us that our monitoring efforts are inadequate. They have advised us to do more comparisons of progress against plans. The current edition of our Strategic Planning Manual incorporates some attempts to get at this issue, but more work is required.

Question #8: In your judgement, what organizational and procedural aspects of your enterprise's approach to corporate planning might be adapted for application to the Federal Government? What forecasting and planning techniques might be adapted for use in the Federal Government?

Reply: As a general rule, I think the overall model of decentralized planning has applicability. The Humphrey-Javits proposal, which, by the way, we strongly favor, would set up a new agency to plot an overall course of action at the Federal level. What's needed beyond this is a system for permitting individual agencies to better plan their own activities. No one can write such plans for these agencies, they must plan for themselves and then seek approval of their plans from the Administration

and from Congress.

I would also urge you to consider strongly the view that the process of planning can be more important than the product. Too heavy an emphasis on coming up with a single roadmap could lock you into a predetermined course of action. The lesson of the past several years is that flexibility is the key to successfully coping with change.

Next, plans for individual agencies must be viewed in an overall context. Like business, the Federal Government has limitations on the amount of resources at its disposal and should not endeavor to fund all options presented to it. The decision on what to fund and what not to fund should not be made piecemeal. It should be made only after looking at the total picture and after weighing the proposals of competing agencies. In this context, some form of zero based budgeting may be in order.

Finally, I urge you to look on planning as an art, not a science - and an imperfect, somewhat arcane art at that. Do not expect more of it than it can provide.

Robert Schmidt
Director, Long Range Planning
The Pillsbury Company
November 19, 1975

RS/pcb

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(202) 225-5716

Xerox Corporation

Stamford, Connecticut 06904
(203) 329-8711

December 4, 1975

Mr. Robert L. Leggett and
Mr. George E. Brown, Jr.
U. S. House of Representatives
Committee on Merchant Marine and Fisheries
Room 1334, Longworth House Office Building
Washington, D. C. 20515

Dear Messrs. Leggett and Brown:

As discussed in Mr. McCardell's letter of November 7, we are pleased to supply, attached, a written statement on corporate planning in Xerox in which we have attempted to answer all of the questions which you have posed.

If there are any areas of our response which are not clear, we would be pleased to provide you with more detailed information.

Sincerely yours,



Donald W. Pendery
Vice President

DWP:vw
Attachments

XEROX

CORPORATE PLANNING IN XEROX

1. Our philosophy is to plan 5-10 years into the future, forecasting the environment through the use of models and the evaluation of established trends. In areas of great uncertainty, we work with best/worst cases as well as a "base case."

We are primarily in the office equipment business and believe that we have found strong correlations between measurements of our business activity and available economic indicators for most major countries.

2. We divide our company into operating units (geographical), business areas (products/market), and functions (such as engineering or manufacturing). The planning process starts by the corporation assigning objectives to the business areas and asking for strategies to achieve the objectives. The business area strategy, when approved by the corporation, becomes the primary input information to the operating units as they begin to prepare their long range plan.

The detailed planning is done on a decentralized basis by the operating units. In some cases, there is considerable involvement of the various functions within the operating units. For example, within our international operations, the major countries participate in the long range planning process.

The final corporate long range plan is consolidated and analyzed on a centralized basis. We examine the results of the planning process to see to what extent the original objectives were achieved. From this examination, we define "issues" covering subjects where we are less than satisfied with the trends indicated by the plan. These issues are assigned by corporate planning to the operating units, business areas, or functions, depending upon where the primary action is expected to take place. These are followed so that by the time the next long range plan guidelines are sent out, we would expect to have resolutions to most of the issues of the prior year. Our Board of Directors would be informed of the final financial outlooks of each year's long range plan.

3. We plan 5 years from the present and in some areas such as product planning and facilities planning, 10-15 years. The timing is related both to our needs and to our ability to forecast accurately.

Long range planning is related to operational planning by taking the first two years of the long range plan and using them as the basis for creating a two year operating plan. It is a rather good test of our plan quality to see how these first two years hold up under the intensive scrutiny given to an operating plan.

The long range plan is updated on a monthly basis.

4. Most of our forecasting is done by the extrapolation of historical trends modified by economic conditions and changes in the marketplace. These methods have

been relatively successful in the past, but we are now working on more sophisticated models which will reflect the results of additional market research and what we hope to be improved capabilities to forecast market segment performance from national economic data.

5. We use computerized planning models extensively. Ideally, we would like to update our worldwide long range plan on a monthly basis so that the effect of every decision would be reflected on a 5-year basis. We have thought a lot about contingency planning, but have not been able to make this a practical tool, primarily because of time and staff limitations. We do think that it is the right way to go. We have also tried best/worst case scenarios since much of our economic forecasting is done on that basis. In our opinion, where major uncertainties exist in the economic forecast, and that is usually the case, the best/worst scenario approach is the only way to show management what kind of swings could occur to the base case. For financial planning, we find that we must work from a single base case.
6. Because we operate multinationally, we must include all social, political, economic, and legal trends in our planning. We show the effect of unquantifiable considerations by requesting a written description of all factors that entered into the creation of the plan including those factors which are purely subjective.
7. It is difficult for us to say what is innovative in our approach to corporate planning because we are not familiar with the planning methods that are used in other major corporations. However, we believe that the concept of working from corporate objectives into business area strategies, and then having the business area strategies presented to the various operating units around the world as guidelines and assumptions to their long range planning, may be somewhat innovative. We have used this for a few years and although there are still some problems to be solved, we feel that this is already successful and will continue to improve. We have been least successful in planning beyond the 5-year period which we know is required for some functions such as the planning of new facilities. In other words, the ability of our planners to forecast accurately seems to decline rapidly as you move out in time. We do not think that we are very different in that respect from other corporations.
8. We do not have a basis to evaluate the applicability of our planning methods to the Federal Government. Ultimately, we feel that our use of computer models would be the most interesting part of our planning methodology to the government. Of considerably less interest in applicability would be that portion of our planning process which is related heavily to our multinational organization structure. This primarily effects our planning cycle. Our forecasting techniques are probably useful, but we do not consider them beyond the current state of the art.

Appendix III. Selected Examples of Corporate Planning Manuals

Suggested outline of a planning manual

CONTENT

PART 1: THE BACKGROUND TO FORMAL PLANNING

- (a) Description of the Formal Planning* approach and processes.
- (b) Marketing Planning.
- (c) The value of the Gap Analysis Technique.
- (d) Features of a good plan.

PART 2: AN OVERVIEW OF THE TOTAL INTEGRATED SYSTEM OF SHORT AND LONG TERM PLANNING IN THE FIRM

- (a) The total system.
- (b) Marketing information required for plans.

PART 3: LONG RANGE PLANNING PROCEDURES AND SYSTEMS

- (a) The types of long range plan which form the system.
- (b) How these are co-ordinated.
- (c) Assumptions.
- (d) Methods of dealing with risk and uncertainty.
- (e) The Strategic Plan.
- (f) Operating Plans—for each corporate activity area.
- (g) Personnel Plan.
- (h) Financial Plan.
- (i) Standardisation of typing, etc.

PART 4. THE ANNUAL PLANNING SYSTEM

- (a) Relation with long range plans.
- (b) Relation with budgetary control system.
- (c) Departmental plans.
- (d) Profit Centre plans.

PART 5: PROJECT PLANS

Methods of evaluating capital expenditure proposals.

PART 6: MONITORING AND CONTROLLING PLANS

- (a) Annual Plans.
- (b) Long Range Plans.
- (c) Project Plans.

PART 7: CONTINGENCY PLANS

Source: Hussey, David E. *Introducing Corporate Planning*.
Oxford, Pergamon Press, 1971. p. 34

1. An Electrical Equipment Manufacturer

The Company Purpose
Introduction
Planning Involves Management
Corporate vs. Division Planning
Concepts for Planning
The Planning Process
The Business Review
The Market and the Environment
Setting Objectives
Selecting a Strategy
Strategic Action Programs
The Profit Plan
Conclusion

Table of Contents of Three Companies' Planning Manuals

2. An Apparel Manufacturer

- I. President's Statement
- II. Organization for Planning
 1. General
 2. Corporate Staff
 3. Divisional Organization
 4. Budgeting
- III. Corporate, Group, and Divisional Objective Setting
 1. Procedure for Objective Setting
 2. General Corporate Objectives
 3. Specific Corporate Objectives: 1972-1976
 4. Specific Divisional Objectives
- IV. Corporate Planning
 1. Description of Corporate Long-Range Plan
 2. Sample Table of Contents, Corporate Long-Range Plan
 3. Group Long-Range Planning
 4. Sample Group Long-Range Plan
 5. Corporate Staff Planning
 6. Samples - Corporate Staff Plans
- V. Divisional Planning
 1. The Divisional Long-Range Plan

2. Recommended Divisional Long-Range Planning Process
3. Use of Strategy Statement in Long-Range Planning
4. Sample Table of Contents — Divisional Long-Range Plan
5. Financial Data — Divisional Long-Range Plan
6. Description of Division Annual Operating Plan
7. Use of Work Project Control in Annual Operating Plan
8. Sample Table of Contents — Annual Operating Plan
9. Operating Plan Checklist
10. The Role of Seasonal and Line Plans

VI. Planning Submission and Approval Process — Corporate

1. Planning and Budgeting Cycle — 1971
2. Plan Review and Approval Process
3. Criteria for Planning Review
4. Long-Range Plans Review Schedule — 1971

VII. Budgeting

1. 1971-72 Budget Procedures
2. Budget — Format Instructions
3. Sample Budget Forms

3. A Forest Products Company

Part I — Introduction

1. Purpose
2. Definition of Long-Range Planning
3. Responsibility for Long-Range Planning
4. Time Span to be Covered

Part II — Divisional Long-Range Planning Procedure

1. Corporate Objectives and Strategies

2. General Economic, Political, and Social Environment Changes
3. Division Long-Range Planning Steps

Step 1 — Determine Key Planning Team Leaders and Get Organized

Step 2 — Determine Present Business Outlook and Position

- a. Develop Business Charter
- b. Industry History, Future Trends and Division's Position

c. Current Situation — Present Business Evaluation

Step 3 — Establish Division Strategy and Objectives

Step 4 — Develop Alternative Courses of Action

Step 5 — Present Division Alternatives and Study Plans to Corporate Management

Step 6 — Division Study of Approved Alternatives

Step 7 — Recommend Division Long-Range Plan to Chief Executive

Step 8 — Implement Division Long-Range Plan

4. Personnel Planning
5. Financial Planning
6. Corporate Long-Range Planning Summary

Part III — Timing, Plan for Planning, and Corporate Coordination

1. Timing
2. Plan for Planning
3. Corporate Coordination

Part IV — Division Presentation Format and Corporate Requirements

1. Division Presentation Format for Step 5 (Present Division Alternatives and Study Plans to Corporate Management)
2. Division Presentation Format for Step 7 (Recommend Division Long-Range Plan to the Chief Executive)

Exhibits

- I. Chairman's Letter on Long-Range Planning Responsibilities
- II. Chairman's Letter on Forest Resource Planning
- III. Development Objectives and Strategies Summary
- IV. Corporate and Divisional Financial Objectives
- V. General Economic, Political, and Social Environment Changes
- VI-XVIII. Report forms to be used by divisions in presenting plans



STRATEGIC PLANNING MANUAL

CORPORATE PLANNING & DEVELOPMENT
F76-F80

TABLE OF CONTENTS

- * Introduction
- * F76-F80 Plan Outline
 - 1. Charter
 - 2. External Environmental Trends
 - 3. Internal Trends
 - 4. Objectives and Financial Goals
 - 5. Strategic Alternatives
 - 6. Product Line Plans
 - 7. Capital Plan
 - 8. Special Program Plans
 - 9. Financial Projections
- * Environmental Overview and Assumptions
- * Timetable

Prepared By
Robert Schmidt
Director, Long Range Planning
September 2, 1975

The Pillsbury Planning Department has designed this manual to provide a common format for the preparation of the F76-F80 Five Year Plan. No single format is ideally suited to the diverse types of businesses in Pillsbury's portfolio. However, there is an underlying discipline to the system set forth in this manual, and each Freestanding Business is expected to adhere to the common format and sequence outlined below. The following is illustrative of the logic and sequential thought process we have tried to build into the planning system.

The Steps in Building a Business Strategy

As an overview in thinking about strategy, either an FSB strategy (e.g., Burger King), or a separate investment center strategy (e.g., Grain Merchandising) or a product line strategy (e.g., Funny Face) - the following are some suggested steps in building a business strategy:

First, analyze your business as it now is (market share, growth/profitability, R01C, etc.).

Second, forecast what is likely to happen to your environment (economy, markets, competition, technology) over the balance of the 1970's.

Third, project your performance over the balance of the 1970's, given your current plans and your forecast of the environment.

Fourth, appraise your strengths and weaknesses vis-a-vis your principal competitors (in products, market share, distribution, technology, etc.).

Fifth, evaluate the differences between your strategy and those of your principal competitors.

Sixth, develop an alternate strategy, if possible, that will position you more favorably vis-a-vis your principal competitors.

Seventh, appraise your alternate strategy in terms of growth/profitability, risk, R01C, etc.

Eighth, if your appraisal produces unsatisfactory results or returns, repeat the cycle until you achieve acceptable levels of growth and profitability, or you conclude that your business is a "holding" or "harvesting" business.

Emphasis of the F76-F80 Plans

The F76-F80 plans differ in two significant respects from last year's plans. First, the F75-F79 plans concentrated on the development of broad strategic thrusts for each FSB. On the basis of last year's plans, we now feel reasonably confident about most of the FSB's broad strategic postures. Therefore, the emphasis of the F76-F80 Five Year Plans will be on the development of detailed action plans which support the agreed upon strategies.

Second, the F75-F79 planning process was a two-stage process. In an effort to reduce the workload on FSBs we have condensed the F76-F80 plans into a single stage format containing nine separate steps or sections:

1. Charter
2. External Environmental Assessment
3. Internal Assessment
4. Objectives and Financial Goals
5. Strategic Alternatives
6. Product Line Plans
Existing Products
New Products
7. Capital Plan
8. Special Program Plans
9. Financial Projections

You may recognize that many of these sections are the same as for the F75-F79 plans, especially the first four sections, and your job here will, hopefully, be one of reviewing and building on last year's plans. Adding some polish and additional detail, and, of course, looking out an additional year into the future. Therefore, in terms of emphasis, FSB planning activities should concentrate on providing a more in-depth look at sections five through eight.

The First Section of your Five Year Plan should be your Charter. A Charter is a one or two paragraph statement which is simultaneously a definition of a Freestanding Business and an authorization for its General Manager.

A Charter is a "definition" of a Freestanding Business' principal activities in terms which should be complete, concise and, hopefully, unambiguous. For example:

- * Product Markets Served
- * Principal Production Facilities
- * Sales and Distribution Systems
- * Geographic Areas Covered
- * Principal Brands
- * Processing Systems and Technologies
- * Relationships to Other Pillsbury Businesses
- * Other Terms Unique to a Particular FSB

A Charter is an "authorization", meaning that it is a negotiable agreement between the Executive Office and the General Manager. As an authorization it should identify the outer limits of the General Manager's responsibilities while allowing independent action within the limits. Since both parties know that the Charter is always renegotiable, these limits can be made current and specific and yet not preclude undiscovered or unidentified opportunities.

An example of an FSB Charter is given on the following page. Please highlight any significant revisions in your Charter with appropriate explanations/implications.

EXAMPLE OF A FSB CHARTER

Mail Order Sales Company

Charter

The Pillsbury Mail Order Sales Company is a wholly owned subsidiary of The Pillsbury Company which is organized to market specialty foods, cookware and related products in the United States and Canada under the "Julia Childs" or manufacturers' brands. Sales are made on a cash basis directly to consumers through direct mail, magazines, and product inserts, and also through independent distributors to better quality gift shops. Products are manufactured for the Company by Pillsbury's Grocery Products Co., Wilton Enterprises, and independent manufacturers under long term contracts. The Company maintains offices and operates out of a 150,000 sq. ft. warehouse and distribution center in Euphoria, Minnesota. The Company has been authorized to explore in-home direct sales and better quality cosmetics products as two areas for possible diversification.

SECTION TWO - EXTERNAL ENVIRONMENTAL ASSESSMENT

The Second Section of your plan should cover external trends and their implications. We ask that this section include three parts which identify three different categories of trends and then touch on the implications of these trends for your business.

- A. Broad socio-economic trends having a direct, significant impact on your business and the implications of those trends for your strategies.
- B. Competitive conditions in your industry (size, growth, outlook, key competitors, channels of distribution), your company's position vis-a-vis the most important competitors, and the implications of these conditions and positions for your strategies.
- C. Major consumer and retail trends in the industry, your company's position vis-a-vis principal customer groups or major retailers, and the implications of these trends and positions for your strategies.

In writing this section, FSB's should remind themselves that: this is a long range plan and it should look beyond the next year or two; the plan should concentrate on significant trends and not try to cover everything; it should summarize trends, not go into great detail; in the implications, it should be candid about the impact, and indicate how severe or long lasting the impact will be.

SECTION THREE - INTERNAL ASSESSMENT AND IMPLICATIONS

The Third Section of your Five Year Plan should cover internal trends and their implications.

The section should include two parts: one covering strengths, weaknesses and their implications and another reviewing trends and progress against your previous Five Year Plan.

A. Strengths, Weaknesses and Implications

The primary emphasis of this section is, of course, to identify things internal to your business, i.e., strengths and opportunities, weaknesses and hazards, critical issues, and the implications of these for your strategies.

To assist you in identifying internal trends, we have put together a rather long list of issues which a General Manager and his management team may want to review for inclusion in the Five Year Plan. This section of the Plan should concentrate on broad or major issues and their implications, leaving smaller issues to the Product Line Plans which follow. Therefore, please do not include comments on each of the following. We offer the list merely to help call to mind the kinds of issues which might be important.

- * Organization and Top Management
- * Labor Resource Trends (salaried, hourly, unions, affirmative action, benefits programs, incentive programs, training programs, etc.).
- * Plants and Facilities (age, efficiency, productivity, location, safety, energy, capacity, development programs, environment, etc.).
- * Distribution Channels (transportation systems, warehouses, equipment, etc.).
- * Supply Issues (sources of ingredient supply, status of contracts, inventory policies, packaging, etc.).
- * Product Line Trends (product vitality and trends, product mix, product line length, quality, brands, nutrition and health safety, regionality, consumer communications, new product development, etc.).
- * Sales Force (size, utilization, reliance on outsiders such as Kraft, independent brokers, etc.).
- * Financial (policies on managing fixed and working capital, important leases and their expiration dates, outside financing, franchise agreements, etc.).
- * Advertising and Promotion Policies (mix of A & SP, MBO's for advertising agencies, consumerism, brands, etc.).

- * Technology (existing competencies, needed competencies).
- * Relationships to other Pillsbury FSB's (transfer prices, shared brands, import-export agreements, shared facilities, etc.).
- * Relationships to Staff Support Groups (legal, MIS, R & D, Marketing Research, etc.).

B. Progress Against F75-F79 Plan

One way to get at the trends in each FSB is to look at your progress against your F75-F79 Five Year Plan, and analyze the reasons for any deviation from plan along with the implications of that for the F76-F80 Plan. To promote this review, we are requesting a brief narrative on your progress against last year's plan, an explanation of variations from plan, and the implications of those variations. In addition, we would like the following brief financial schedule on F75 and F76.

F76					
F75 Actual			F75-F79 Plan		
Vol	Sales	PBT	Vol	Sales	PBT

Profit Center

- 1.
- 2.
- 3.

Total

Invested Capital

Working Capital

Fixed Capital

Total

ROIC (%)

F76					
F75 Actual			F75-F79 Plan		
Vol	Sales	PBT	Vol	Sales	PBT

Current Proj.		
Vol	Sales	PBT

SECTION FOUR - OBJECTIVES AND FINANCIAL GOALS

The Fourth Section of your Five Year Plan should contain your major objectives and financial goals for the F76-F80 period. In other words, this Section summarizes where a General Manager would like to take his business over the five year period in light of his Charter and the External and Internal Appraisals which preceded this Section. The minimum requirement for this section is a set of realistic, reachable financial and quantified goals which might be

- * Broad Product/Portfolio Mix and Market Share Objectives
- * Sales and Earnings Targets and Annual Growth Rates by Investment Center
- * ROIC Targets and Standards by Investment Center
- * Other Targets Unique to a FSB (Margins, Unit Volume, Store Openings for Burger King and Pie Shops, etc.).

The Fifth Section of the Five Year Plan should outline some possible alternative business strategies for your company. Previous Sections have touched on what the present status of your business is and where you would like to take the business over the Plan period. This section deals with how you propose to go from what you are to where you would like to go. Strategies should be set forth on three levels:

- A. "Portfolio" Strategies - Strategies covering the overall direction or redirection of a FSB's portfolio and strategies for closing any planning "gaps" (strategies for major existing or new product areas, redeployment of assets, major organizational changes, major capital spending programs, and so on).
- B. "Performance" Strategies - Strategies aimed at achieving broad improvements in a FSB's performance and optimizing its principal strengths and resources (strategies for cost reduction programs, increasing productivity, changing product mix, redirecting marketing efforts, reducing energy consumption, affirmative action, etc.).
- C. "Alternative" or "Contingency" Strategies - Strategies to deal with unusual, unlikely or unpredictable but, nevertheless, possible contingencies, crises or opportunities, which have not been incorporated in an FSB's financial goals or objectives (crises such as substantial increases in the cost/availability of fuel or gasoline, substantially higher prices for ingredients, substantially higher A & SP spending by competitors, new technologies, etc.).

This Section should cover broad, overall strategies for your FSB. Detailed product line strategies should be set forth in the next section of the Plan. We indicated this summer that we would like to make market share leadership a theme for the F76-F80 Five Year Plans. Toward this end, this section of the Plan should indicate where you think you have opportunities to improve your market share position and how you propose to concentrate resources to achieve this improvement. Some strategies for achieving leadership are summarized on the following page.

Market Share Leadership

We have reported in separate communications the remarkable correlation between profitability and market share measured by the Boston Consulting Group, The Marketing Science Institute and others, along with their conclusion that the road to increased profitability comes not through the maintenance of secondary market share, but rather by driving for and achieving market leadership.

It was also indicated that market leadership can be achieved by:

- * Identifying product/market areas where strong positions can be established and maintained.
- * Avoiding head-to-head confrontation with large, well-entrenched, low-cost competitors.
- * Developing products with a clear and demonstrable advantage over existing products.
- * Effectively communicating product characteristics to target customer-market segments.
- * Committing sufficient human and financial resources to effectively execute product/market strategies.

Additionally, it should be emphasized that market share leadership need not mean national leadership. The number two or three competitor nationally usually has or can achieve market share leadership in some subsegments of the national market, and, thus, can achieve the higher rewards which attend market share leadership. However, this requires concentrating resources against these strong or growing product and market positions. Also, we do not restrict these comments to geographic segmentation. They also apply to demographic segmentation, lifestyle segmentation, product-usage segmentation, etc.

The Sixth Section of the Five Year Plan should contain Product Line Plans (Marketing Plans) for the more important segments of a FSB's portfolio, both existing and new. Detailed Product Line Plans should be written only through F78 and then extended or extrapolated through F80.

To clarify the term "Product Line", we are not referring to separate Investment Centers which have traditionally written complete plans (such as Agri-Products' Industrial, and Grain Merchandising Divisions), but rather to Profit Centers, within Investment Centers (such as Industrial's milling, bakery mix, foodservice, Bitsyn, Hydro-processing, and various support businesses). In addition to Product Line Plans for the existing products of an Investment Center, there should be a plan for any new product segments.

We might also take a moment to clarify another aspect of the Product Line Plans. A long-standing principal of planning at Pillsbury has been that of decentralized planning. Since knowledge, resources and management at Pillsbury are decentralized, it has been felt that planning should also be decentralized. General Managers who make the effort to have plans written by people with operational responsibility for a business segment tend to find that this is the key to turn planning from an exercise into an effective management tool and an instrument of change. All General Managers are encouraged to follow the principal of decentralized planning in assigning people to write Product Line Plans.

The format of Product Line Plans closely parallels the format for each overall FSB plan, including a Charter, External and Internal Assessment, Goals, Strategies, and Financial Projection. A full explanation of these sections begins on the next page.

PRODUCT LINE PLAN FORMAT

Charter

Charters already exist for most product lines, but, since strategies can vary considerably, depending on the degree of latitude given a manager in his charter, you may want to review them at this time. As in the past, each Product Line Charter should be a one paragraph statement which defines its product line in the following terms:

- * Product markets served
- * Primary customers served
- * Sales and distribution systems
- * Geographic area covered
- * Brand employed
- * Production facilities
- * Processing systems and technologies
- * Relationships to other Pillsbury businesses
- * Other terms unique to a particular product line

External Market Trends and Implications

The external environmental factors cited in each Product Line Plan should be very brief and should relate in very specific terms to the Product Line being covered. We are not looking for a repetition of the general trends presented in Section Two of the Plans (see page 3), but rather:

- A. Only those socio-economic trends which have a major bearing on this particular Product Line and the implications of those trends for your strategy.
- B. Competitive conditions in this product category (size, growth, outlook, key competitors, channels of distribution) and Pillsbury's position vis-a-vis the most important competitors and the implications of these conditions for your strategy. Very important here are the strategies being followed by competitors in pricing, positioning, A & SP, new products, quality, etc.
- C. Consumer and retailer trends for this product category and Pillsbury's positioning vis-a-vis principal customer groups and vis-a-vis key types of retailers or key accounts, and the implications of these trends and positionings for your strategy.

Competitive conditions are probably the most important part of this section, and Product Managers should identify leading competitors by name, indicate the strategies these competitors are following, identify competitors' strengths and weaknesses, and indicate what must happen in order to take market share away from these competitors.

Internal Trends (Strengths, Weaknesses, Critical Issues) and Implications

This section of the product line plan should cover internal trends and their implications. The section should include two parts, one covering strengths, weaknesses, and their implications, and another which reviews trends and progress against your previous Five Year Plan.

A. Strengths, Weaknesses, and Implications

The primary focus of this section is on your strengths and opportunities, your weaknesses and hazards, and the implications of these for your strategies.

As we did in the instructions for Section Three on page 4, we are providing a rather long list of issues which should be reviewed to determine which are important enough to be summarized in the Internal Trend Section. We emphasize that we don't want each of the following items covered in every Product Line Plan. The following list of examples is intended to help you call to mind issues which might be important:

- * Product Line Trends (product market vitality and trends, product mix, length of line, quality, brands, nutrition and health safety, regionality, consumer communications, new product development, etc.).
- * Brand Strategy (registration and use of principal brands such as Pillsbury, Burger King, Ballard, Wilton, Souverain, etc. and the registration and rationale for product positionings under these brands such as Hungry Jack, 1869, Figurines, Whopper, Funny Face, Bitsyn, etc.).
- * Advertising and Promotion Policies (mix of A & SP, market segmentation, regional marketing, MBO's for advertising agencies and measurement of advertising effectiveness, labeling, consumerism, brands, etc.).
- * Pricing Strategy (margin problems, reaction of competitors to price changes, effect of price changes on consumers, etc.).
- * Retail and Trade Relations (status of key retail groups such as supermarkets, convenience stores, foodservice companies, geographic weaknesses, key accounts, etc.).
- * R & D and Technology (existing competencies, needed competencies, technological threats, etc.).

- * Sales Force Trends (effectiveness, communications, incentives, reliance on outside brokers, etc.).
- * Distribution Channels (transportation systems, warehouses, equipment, etc.).
- * Supply Trends (sources of supply, growers' contracts, inventory turnover and policies, availability of substitutes, etc.).

B. Progress Against F75-F79 Plan

One technique to get at the trends affecting a product line is to review progress to date against the F75-F79 Plan, and analyze the reasons for any deviation from the plan along with the implications of that for the F76-F80 Plan. To promote this review, we are requesting a brief narrative on your progress against plan, an explanation of deviations, and the implications of those variations. Also, we would like to have the following brief financial schedule completed for F75 and F76:

	Actual		F76 Estimate	
	<u>F74</u>	<u>F75</u>	<u>F75-F79 Plan</u>	<u>Annual Plan</u>
Market Size (Units)				
Volume				
Market Share (%)				
Sales (\$)				
Gross Margin (\$)				
A & SP (\$)				
R & D (\$)				
Market Research (\$)				
Prod. Contribution (\$)				

Objectives and Financial Goals

This section should identify realistic, reachable financial and quantified goals for the product line through F80. The goals should be stated in terms which might include:

- * Market Size and Annual Growth Rate (Units)
- * Market Share Target
- * Unit Volume and Annual Growth Rates
- * Earnings Targets and Annual Growth Rates
- * Other Targets Unique to a Product Line (Margins, Production Capacity, A & SP Expenditures, R & D Expenditures, Store Opening Plans, etc.).

In Section Five on page 6, we suggested FSB's consider three types of strategies: "Portfolio" Strategies, "Performance" Strategies, and "Alternative" or "Contingency" Strategies. For the most part, the Product Line Plans will concentrate on performance strategies through F78, i.e., strategies aimed at achieving broad improvements in performance, optimizing principal strengths and resources, and overcoming weaknesses (strategies for achieving market share leadership, cost reduction programs, increasing productivity, changing product mix, redirecting marketing efforts, product line extensions, etc.).

In the past, some strategic plans have lacked substance and credibility. Consequently, we have decided to shorten the planning horizon for Product Line Plans, looking out only two years to F78 and extrapolating from there. However, Strategies are the heart of the plans and we would like them to be more fully documented than in the past in terms of:

- * Description of the Strategy
- * Positioning Against Key Competitors, Customers, and the Trade (Pricing, Quality, A & SP, New Products, etc.).
- * Marketing Programs
- * Timing for the Strategy (including quarterly progress steps)
- * Identity of the Managers Responsible for Executing the Strategy
- * Facilities to be Utilized
- * R & D, Marketing Research, Other Support Services
- * Decision Rules and Key Things Which Must Happen if the Strategy is to Succeed
- * What Do We Do if the Strategy Fails?

By way of example, it is not a strategy for a Product Manager to say that his plan is "to launch a major consumer marketing program to expand market share". This is an objective rather than a strategy. A real strategy should explain what kind of marketing leverage will be used, what kind of positioning against customers and competitors will be made and what the likely response of competitors will be. It should also indicate such things as where the expanded volume will be produced and whether increased plant capacity is required, when the program will be launched, what support services will be required, who will be responsible for executing the various steps of the plan, the date when each step will be completed. If some of these elements are not presently known, then the timetable for developing the answers should be set out.

Also, the Product Line Plans should reflect the same concern over market share leadership as the overall Five Year Plan, and you may wish to refer back to the comments on page 7.

Project Control Worksheets

In order to effectively monitor progress against the Five Year Plan, we are including a new form in the F76-F80 Planning Manual called the Project Control Worksheet. Project Control Worksheets should be filled out for each major strategy outlined in a Product Line Plan. The last two columns of the worksheet should be left blank and will be used to monitor progress against plan and update projects from one Five Year Plan to the next. A sample Project Control Worksheet is given on page 15.

Product Line Financial Projections

A one page Financial Projection should be completed for each Product Line Plan (see page 16). The schedule includes a fairly standard P & L statement down to either a PBT or Product Contribution level, depending on how different FSB's normally allocate overhead expense to product line businesses, plus a few standard ratios off the P & L statement. We are also requesting a breakout of any major capital spending implications which relate to a specific strategy and an indication of invested capital and ROIC for those product lines where these figures are available.

PROJECT CONTROL WORKSHEET

Product Line

Project Step/Description	Assigned Responsibility	Decision Points		Major Capital/Expense Items		Status/Remarks
		Start Date	End Date	Estimated	Actual	

PRODUCT LINE FINANCIAL PROJECTIONS* FOR:

	Actual	Est.	Plan	
(\$ 000)	F74	F76	F77	F78 F79 F80
Market Size (Units =)				
Annual Increase (%)				
Market Share Target (%)				
Volume (Units =)				
Annual Increase (%)				
Gross Sales				
Net Sales				
Annual Increase (%)				
Gross Margin				
Advertising				
Variable Promotion				
Other Promotion				
Total				
Net Margin				
Expense				
R & D				
Marketing Research				
Other				
Product Contribution or PBT				
Annual Increase (%)				
Ratios				
GM:NS				
A & SP:GM				
PBT:NS				
Price/unit				
GM/unit				
A & SP/unit				
New Capital Requirements				
Owned/Leased P, P & E (k)				
Invested Capital (c)				
Working Capital				
Fixed Capital				
Total				
ROI (c) (d)				

(*) For explanation of terms, refer to footnotes on page 27.

(*) Extrapolate F74-F78 trends to get F79 and F80 figures.

Section Seven of the Five Year Plan is the Capital Plan for the FSB. The Capital Plan should include narrative sections explaining the FSB's facilities plan, working capital plan, and financing plan, if any part of the business is self-financing, along with a schedule covering capital spending projections for the F76-F80 period.

Facilities Plan

The facilities plan should contain a narrative status report on the principal facilities of the FSB, both owned and leased. Obviously, some facilities should be lumped together - regional concentrations of Burger King restaurants, for example. In the case of leased facilities, expiration dates of important leases should be part of the status report.

The second part of the facilities plan should be a summary of proposed capital spending by project and by fiscal year for F76 and F77, and for F78-F80 to the extent possible. Projects in excess of \$100,000 should be broken out and a brief explanation of the projects should be given. Indicate the expected IRR for the projects, if known. Consideration should be given to manufacturing systems for new or restaged products, to new facility needs, and to energy, OSHA, or pollution control projects.

Working Capital Plan

Working capital has become a major issue for the corporation in this period of tight capital markets and rising commodity prices. Therefore, in addition to indicating the working capital needs in the financial schedule, please include a brief narrative section in the Capital Plan which highlights key working capital issues and which outlines your programs for managing working capital requirements. We have also included a couple of working capital ratios in the capital spending schedule.

Financial Plan

If your company undertakes any self-financing, the Capital Plan should include a brief narrative section which outlines borrowing requirements, sources of funds, and repayment requirements over the F76-F80 period.

CAPITAL SCHEDULE FOR TOTAL BUSINESS*

(\$ 000)

	Actual	Est.	Plan	
	F74	F75	F77	F78
		F76	F79	F80
Invested Capital (Beg. of Yr.)				
Base Working Capital				
Facilities - Owned				
- Leased (P.V.)				
- Allocated (b)				
Other Assets (Includ. Goodwill)				
Total (c)				
Changes in Invested Capital (+)				
Working Capital Additions				
Fixed Capital Additions:				
Owned				
Leased (P.V.)				
Total Capital Spending				
Depreciation & Amortization				
Facilities - Owned				
Facilities - Leased				
Other Assets/Goodwill				
Disposals/Adjustments				
Facilities Allocated (b)				
Net Change in Inv. Cap. (h)				
Long-Term Debt (if any)				
Beginning of Year				
Plus Additions				
Less Current Maturities (j)				
End of Year				
Interest Expense				
Applicable to LTD (a)				
Short-term Interest				
Total				

* For an explanation of terms, refer to footnotes on page 27.

SECTION EIGHT - SPECIAL PROGRAM PLANS

Since some strategies in your Five Year Plans can apply to more than a single product line, we are asking you to include an additional section to cover these strategies.

For want of a better term, we refer to these sections as Program Plans. Examples of possible Program Plans might include:

A. Resource Plans Cutting Across All or Several Product Lines

- * Facilities and Transportation Programs Not Covered in the Capital Plan
- * Manpower and Organizational Programs
- * Key Ingredient or Materials Programs
- * Sales Force/Distribution Plans
- * R & D or Other Research Programs
- * Advertising and Promotion Programs
- * Acquisition, Diversification or Divestment Programs
- * Other

B. Programs for Dealing With Critical Environmental Issues

- * Government Regulations
- * Energy
- * Affirmative Action
- * Environment
- * Value or Lifestyle Trends
- * Economic or Competitive Change
- * Other

If a Freestanding Business covers two or three of these types of issues in each plan, they would, over the course of several years and several plans, manage to stay abreast of most critical resource and environmental issues. Once an issue is covered in a five year plan and a strategy is adopted, it may not be necessary to replan on that issue until several

years later. Thus, in selecting issues to cover in the F76-F80 Plan, you should concentrate on identifying two or three major issues which are in need of immediate resolution today and map out a strategy for dealing with those issues over the next several years. The energy crisis might be an example of an issue which currently merits top priority.

Once a General Manager has identified the issues he would like to address in the F76-F80 Plan, he should assign the responsibility for authoring the Program Plans to specific individuals. The Program Plans should:

- * Define the issue and the implications for the FSB.
- * Review Alternative responses to the issue along with the capital or expense implications of different responses.
- * Recommend a specific program for the FSB.
- * Fill out a Project Control Worksheet (see page 14) to monitor progress against plan as the strategy is executed.

SECTION NINE - FINAL FINANCIAL PROJECTIONS

Four financial schedules should be completed for each of a FSB's existing investment centers and for the consolidated businesses:

- * Summary Schedule
- * Income Statement
- * Expense Summary
- * Comparison of F75-F79 and F76-F80 Plans

Footnotes to assist you in completing the financial schedules are included on page 27.

Also attached is a set of economic and price assumptions for the F76-F80 period. We would like all FSB's to use the inflation factors summarized on page 38 in their Financial Projections to insure that all plans are submitted on a comparable basis. Exceptions should be cleared with the Planning Department before the plans are submitted.

SUMMARY SCHEDULE FOR TOTAL BUSINESS*

(\$000)

	Actual	Est	Plan	
	F74	F75	F76	F77
				F78
				F79
				F80
Unit Volume (Units =)				
Annual Increase (%)				
Net Sales				
Annual Increase (%)				
Net Income (e)				
Annual Increase (%)				
Net ROS (%)				
Profit on Invested Capital				
PBT				
Plus:				
Interest on LTD				
Interest on Lease Rentals				
Minority Interest PBT/Other				
Total				
Invested Capital (Beg. of Year)				
Working Capital				
Facilities - Owned				
- Leased (PV)				
- Allocated (b)				
Other Assets (Incl. Goodwill)				
Total (c)				
ROIC (%) (d)				
Cash Available				
Net Income (e)				
Depreciation & Amort.				
Disposals/Adjustments				
Financing (Net)				
Total				
Cash Usage				
Chg. in Working Capital				
Capital Spending (Owned/Leased)				
Total				
Cash Generated/(Absorbed) (f)				
Earnings Per Share (\$) (g)				

INCOME STATEMENT FOR TOTAL BUSINESS

(\$000)

	Actual	Est	Plan	
	F74	F75	F76	F77 F78 F79 F80
Unit Volume (Units =)				
Annual Increase (%)				
Sales				
Mfg Sales - O/S				
Mfg Sales - Intra-company (1)				
Merch Sales - Gross Sales				
Less Cost of Merch Sales (m)				
Sales Deductions				
Net Sales				
Annual Increase (%)				
Gross Margin				
A & SP				
Advertising				
Variable Promotion				
Other Promotion				
Total				
Net Margin				
Expense				
R & D				
Marketing Research				
Other				
Total				
Profit Before Tax				
Income Tax				
Net Income (e)				
Annual Increase (%)				
Ratios				
GM:NS				
NM:NS				
PBT:NS				
RI:NS				
A & SP:GM				

EXPENSE SUMMARY FOR TOTAL BUSINESS

(\$000)

	Actual	Est	Plan
	F74	F75	F76
			F77
			F78
			F79
			F80

R & D Expense
 Gross Margin Improvement
 New Products - Old Technology
 New Products - New Technology
 Maintain/Improve Existing Products
 Total R & D

A & SP Summary
 Advertising
 Existing Prods./Brands
 New Prods./Brands
 Variable Promotion
 Existing Prods./Brands
 New Prods./Brands
 Other Promotion
 Existing Prods./Brands
 New Prods./Brands
 Total A & SP
 A & SP: GM (%)
 A & SP: NS (%)

Marketing Research
 Existing Products
 New Products
 Total

COMPARISON WITH F75-F79 PLAN

(\$000)					
	<u>F76</u>	<u>F77</u>	<u>F78</u>	<u>F79</u>	<u>F80</u>

Net Sales (m)
F75-F79 Plan
F76-F80 Plan
 Difference

PBT (e)
F75-F79 Plan
F76-F80 Plan
 Difference

Invested Capital (Beg. of Year) (c)
F75-F79 Plan
F76-F80 Plan
 Difference

ROIC (%) (d)
F75-F79 Plan
F76-F80 Plan
 Difference

Cash Generated/(Absorbed) (f)
F75-F79 Plan
F76-F80 Plan
 Difference

Explanation of Major Deviations

- 1.
- 2.
- 3.
- 4.

FOOTNOTES

- (a) Interest on beginning of year long-term debt and beginning present value (PV) of leases only.
- (b) Includes the allocation of the office building lease and all asset allocations (R & D, Information Systems, etc.).
- (c) Invested Capital at beginning of year less Net Change in Invested Capital must equal Invested Capital at end of year (beginning of next year).
- (d) Profit on Invested Capital divided by beginning of year Invested Capital.
- (e) Profit Before Tax times effective tax rate where known, otherwise assume 50% tax rate.
- (f) Net Cash Flow should be the sum of Net Income less the net increase in Invested Capital or plus the net decrease in Invested Capital.
- (g) Divide Net Income by 5,616,000 share in F74; 5,617,000 shares in F75; 5,925,000 shares in F76; and 6,000,000 shares in F77-F80.
- (h) Calculate for F80 even though F81 Invested Capital is not requested.
- (i) In appropriate terms, i.e., units of capacity or utilization rate (100% = 5 days/3 shifts) or (100% - 312/twenty-four hour days).
- (j) Should be sum of transfers to Current Liabilities plus any other reduction of beginning balance.
- (k) Itemize capital projects in excess of \$100,000.
- (l) Include only sales made to other Pillsbury owned Investment Centers or subsidiaries.
- (m) Only net merchandising sales should be carried down to the net sales line.

ENVIRONMENTAL OVERVIEW

General Economic Outlook

Forecast. In forecasting today's economic outlook, it is essential to look beyond single month data to the underlying trends. If you do so, it becomes clear that the state of the economy today is substantially altered from what it was twelve months ago. At that time we faced double digit inflation and the employment and production indexes were in rapid decline. Today the inflation has subsided to the 5-6% range. The recession has bottomed out, and the economy is beginning to show signs of moving back up. However, recovery will not return us to a combination of low unemployment and low inflation quickly. Led by price pressures from the deregulation of domestic oil and from agricultural commodities, inflation should continue at rates above historical averages. Now that inventories have been worked off, output should begin a gradual, sustained upward movement, but, because of excess capacity and productivity gains, the improvement in unemployment will occur slowly. We anticipate the following pattern of real growth and inflation:

	<u>F76</u>	<u>F77</u>	<u>F78</u>	<u>F79</u>	<u>F80</u>
Real Growth (%)	6.0	6.0	5.0	4.0	3.0
GNP Deflator (%)	6.5	6.5	6.0	7.0	8.0
Total Growth (%)	12.8	12.8	11.4	11.2	11.3

Implications. Although it will simplify matters to only have to contend with inflation, that is something of a mixed blessing. Our financial goals must be revised upward in some cases. We must average 6-7% growth in sales and earnings just to stay even. In this environment, productivity will become more important. Marketing emphasis should shift from push to pull, from price and trade promotion to media and consumer promotion. Pricing can afford to be more aggressive. New products should be better received. Capital costs will tend to be underestimated. The climate will be relatively favorable for harvesting strategies or divestment activities, but also more favorable to strengthening weak market positions and for making acquisitions.

Financial Markets

Forecast. The equity market has recovered gradually in line with the overall economy, but PE ratios are still below historical levels and stock prices will be more closely associated with yields. The debt market will continue to be characterized by higher interest rates and a broad liquidity squeeze. Using a 2½-3% real interest rate plus 6-7% inflation, long-term rates should be in the neighborhood of

9-9½ %. Short-term rates should be below long-term rates but remain high:

	<u>F76</u>	<u>F77</u>	<u>F79</u>	<u>F80</u>
Corporate "AA" Bond Rate (%)	9.2	9.0	9.5	9.5
Prime Commercial Bank Rate (%)	8.0	8.5	7.5	7.5

Implications. Neither the equity nor debt markets are currently favorable to the raising of new funds, although an equity issue may be possible later in the plan period. This means the FSB's must practice tighter asset management (as opposed to P & L management). Cash flow will become even more important, to provide for higher dividends as well as supply investment dollars. Interest charges will continue to be a major expense item and greater attention must be given to the measurement and management of working capital and inventories.

Consumer Markets

Forecast. Real disposable income has taken an upward turn, with a strong assist from the tax rebate, and the indices of consumer sentiment mirrored this with a 15 point jump over February's record low of 58. The outlook is for real disposable income to move up by about 4-6% during F76 and average 2-3% growth longer term. This compares to about a 4% average from 1960 to 1974. With food prices expected to inflate somewhat below the overall inflation rate, food should again absorb a smaller portion of both real and actual disposable income. However, the consumer is unlikely to lose his sensitivity to food prices. Prices of housing, automobiles, durables and other consumer goods will continue to rise and consumers will seek to "economize" on food in order to acquire these other items. This is especially true now that it is becoming harder to defer the replacement of aging durables, autos, etc., or, in the case of young adults, when they are just accumulating these items for the first time.

Implications. This cautionary note on price sensitivity should be read as a qualifier to the earlier statement that more aggressive pricing will be possible. Pricing should be most aggressive on unique, exclusive items but must reflect relative price/values in more competitive product categories. Staple foods (including Burger King) should benefit from some trading down to relatively less expensive products. Higher priced convenience foods should continue to do well to the extent that they offer real convenience, superior quality, and high hedonic appeal. Another way to view the consumer markets is that the improvement in disposable income will permit consumers to return to the consumption patterns which developed in the sixties but which were temporarily abandoned in 1973-1974. However, the experience of 1973-1974 has taught the consumer to be more discerning and more cautious, especially in the sensitive area of food purchases.

Labor Markets

Forecast. Labor markets exhibit something of a lagged response to the overall economic conditions, and wage demands in 1975 are catching up to earlier inflation. Longer term, we expect wage demands to try and make up for the anticipated 7% inflation on top of 2-3% growth in real disposable income and therefore average about 9%. The minimum wage will rise 9.5% to \$2.30/hour on January 1, 1976 and should jump to at least \$2.70 by 1978.

	<u>F76</u>	<u>F77</u>	<u>F78</u>	<u>F79</u>	<u>F80</u>
Inflation Rate - Wage Demands	9%	10%	9%	9%	9%

The historical solution to higher wage demands has been productivity, but, except for 1975 when we stand to benefit from a rapid run up in productivity as capacity utilization rises, the outlook on productivity is something less than its 2½-3% historical average. The reasons for this are strong unions, a service economy, a declining work ethic, numerous government regulations, etc.

Implications. Pillsbury must expand its efforts to increase productivity to offset higher labor costs. We must also begin to look at a variety of different incentive programs to improve the quality of labor - in a diverse, pluralistic society, we will need diverse, pluralistic incentive programs. Labor unrest may also disrupt sources of supply and transportation. We should avoid reliance on individual companies and have alternative sources of supply identified. The funding and management of pension plans could become a major issue for the Corporation, especially if the securities markets continue to be depressed.

Agricultural Commodity Markets

Forecast: World reserves of key crops are precariously low. The combination of world population growth (2.1% a year) and income growth is causing overall demand for food to rise at 2.4% a year, while production has been rising at 2.5% a year. However, the rising preference for animal protein is causing demand for grains to rise at 3.3% a year versus only a 3.0% average increase in production. Energy related problems may further slow production gains. The combination of rising demand and increasing costs should push food prices still higher over the plan period but at a slower rate than in the recent

past. At the same time, the absence of large carry over stocks and the deregulation of U.S. agriculture encourage wide annual price swings around the long range trend line. Sugar, oils, fruits and nuts, cocoa and other key ingredients appear to be following patterns similar to the grain crops. The wholesale price index for farm products, a general gauge for the rate of inflation on ingredient costs, is expected to follow the following pattern:

	<u>F76</u>	<u>F77</u>	<u>F78</u>	<u>F79</u>	<u>F80</u>
WPI - Farm Products	198	203	213	224	235
Annual Increase	5.0%	3.5%	5.0%	5.0%	5.0%

Implications. The long-term outlook in food processing is for a continuing profit squeeze, but one of manageable proportions. The real threat is from the volatile price swings around the trend line. There will have to be a greater emphasis on programs to manage margins on a short run basis. Strategic plans should begin to identify options here (diversification into other food categories, substitute ingredients, inventory policies, pricing strategies, etc.). Pillsbury's Feed and Grain Merchandising businesses should benefit from growing world demand for U.S. farm products, but price volatility may require even more closely disciplined trading programs and more limited investment policies than demand alone would suggest. There may be expanded opportunities to export food and agricultural technology and equipment as well as opportunities for exporting the foodstuffs themselves.

Energy

Forecast. Congress has defaulted to the White House on a national energy program. It now appears that we will rely on higher prices and the market mechanism to allocate fuels and reduce consumption. The deregulation of domestic oil is expected to add up to two percentage points to the inflation level in 1975-1976, but, thereafter, energy prices should stabilize at the new, higher levels. The higher prices should deal with most energy issues over the five year period and will gradually force a conversion to alternative energy sources such as coal, nuclear, and solar energy. The only area where critical shortages will occur is in the natural gas sector, and, for planning purposes, it is safest to assume that natural gas will be unavailable for industrial uses. We expect about a 20% rise in energy costs the next two years, 8% in F78, 8% in F79, and 5% in F80.

Implications. Efforts to reduce energy consumption continue to have high priority, both to minimize the potential impact of any shortages and to offset higher energy costs. Pillsbury's industrial use of natural gas should essentially be down to zero by 1980 and the restaurant operations should continue to explore alternatives to natural gas for heating and cooking.

Not to be facetious, but energy conservation will provide excellent opportunities for cost reductions. Energy intensive products or processes should be reviewed for alternative product formulations and manufacturing processes. Energy availability should be a prime factor in site selection for new facilities, and Burger King and Pie Shops should locate restaurants to minimize the potential impact of gasoline shortages.

Retail Food Trade

Forecast. The evolution of the supermarket into the super store (30,000 plus square feet, \$5 million annual volume) is continuing as is the growth of the major chain operations. There are implications for the consumer companies from the standpoint of size and concentration alone, but the super store is also different in terms of product presentation and methods of operation. The evolving network of superstores will be supplemented by chains of smaller convenience and specialty stores with the capability of becoming major accounts.

We will be selling to fewer but larger retailers, and they will be operating in a more sophisticated manner than today's retailers. Automatic checkouts are already close to implementation with the industry-wide move to electronic cash registers and Universal Product Codes. These will be computer linked for inventory control, space allocation, culling low volume-low margin items, etc. Retailers will be able to impose more standardization on processors in packaging, palletizing, pricing, etc., and warehousing and transportation will be affected by these changes. The retailer is, in effect, seeking to achieve productivity gains by forcing retail functions back to the processor level, all very logical given the competitive, price sensitive nature of his business. For the same reason, private label will continue to make inroads in commodity product sectors.

Implications. With the big retailers getting bigger, not to grow with them is dangerous; so scale will become even more important. We must provide important services as well as products to the trade if we are to remain important to them. On the product side, brand leadership, good volume and good margins will be important in combating the leverage exercised by fewer but larger retailers. Products which do not fit this description become candidates for milking strategies or discontinuation. On the plus side, there will be less competitive threat to successful new products. In addition, our sales activities may be simplified by working with fewer, better informed retailers. (The communications process from manufacturer to retailer is changing.)

Foodservice

Forecast. Away-from-home eating now accounts for about 21% of total food consumption and, according to

trade sources, a third of all meals eaten. The Yankelovich survey indicates that the recession did have its impact on away-from-home eating, 52% of the population surveyed reported dining out less often in 1974. However, the percent reporting that they were eating more often in informal, family-type eating places jumped from 14% in 1973 to 24% in 1974. The net effect of these two countervailing forces was an industry-wide sales increase of 5.5% after a 10% average price increase.

The long-term outlook is for the industry to grow at 10-11% a year, including 7% inflation. The factors promoting this growth are changing lifestyles, most of which are positive to away-from-home eating, rising incomes, and aggressive expansion and promotion by chain restaurant operators.

Assuming gasoline remains readily available, fast food outlets should continue to grow at about 9-10%, or slightly below the industry pace. Above average growth will occur in the upscale steak and liquor restaurant sector. On the supply side, competitors continue to build at a heady pace, and the industry is trending to more uniform menus and quality levels, all of which will pressure margins. Food industry analysts have begun to forecast saturation levels in the fast food industry.

Implications. While the outlook on the demand side of the fast food industry continues favorable, the threat of overcapacity poses some threats to industry margins and profitability. Strategies to achieve menu differentiation, market segmentation, etc., will become more important for Burger King. Pie Shops, which already has a fairly unique image, must focus on maintaining quality control and retaining the correct price/value relationship to achieve real volume growth. Site selection is crucial for both restaurant concepts - from the standpoint of minimizing competitive pressures and as a hedge against gasoline shortages. The opportunities to supply the restaurant industry with ingredients will expand, with the caveat that this is a price-oriented market which has a history of unpredictable earnings.

International Markets

Forecast. The leading international economic problems are the same as those in the United States, a fact explained by the growing interdependence of nations in supplies of food, energy and natural resources. The outlook for the developed countries is for gradual economic recovery accompanied by above average inflation. The United States is expected to lead the other developed countries in economic recovery and, in fact, provide some of the stimulus to the others. Canada is mirroring the U.S. situation very closely. In Europe, Germany is expected to lead the recovery followed by France in 1976. The U.K. is out of phase with the rest of Europe and their recession is expected to last through 1976 and into 1977. In the Pacific, Japan and Australia are both experiencing positive growth and should fare somewhat better than Europe. Latin America hasn't suffered from a recession in the U.S. or European mold, but inflation has

remained a constant problem.

The value of the dollar should strengthen over the next several years, and, thanks to some impressive spending in industrial nations, the Arab oil dollars are recycling better than anyone had anticipated. On the negative side, global economic problems have caused widespread political instability in both developed and underdeveloped areas. The problems in the latter areas are more acute with respect to food, given the fact that food consumption accounts for a much higher portion of disposable income in these markets and higher prices simply cannot be absorbed. But in Europe, the risk of Portugal's example spreading to Italy and other neighbors is very real.

Implications. Pillsbury's European businesses should continue to plan for a profit squeeze and possible weakness in the franc and pound sterling. Erasco may fare better since domestic German producers will have an exchange rate advantage over foreign suppliers. The Latin American businesses should also plan for an inflationary profit squeeze and, of course, economic nationalism. However, problems shouldn't reach crisis proportions thanks to oil in Venezuela and political stability in Mexico. Canada and Australia combine a well-educated population and capital with plentiful natural resources and strong agriculture. Both should experience healthy growth if they can keep inflation under control. The Philippines have embarked on an extensive program to develop natural resources but the payoff is some years away. Brazil and Japan represent the best markets for new expansion by International, along with Spain if there is a smooth transition of political power. There is a void in many foreign markets for inexpensive, quality food served quickly and conveniently, and Burger King may be able to find a place in many of these markets.

Government Regulations

Forecast. Regulation of all phases of business will intensify and the food processing industry will be singled out for special attention. An Agency for Consumer Advocacy (formerly CPA, now ACA) will be established soon with broad powers to initiate actions on behalf of consumers or intervene in other agency proceedings, court cases, etc. Even if other agencies received no extensions of authority, we could expect a more rigorous application and extension of existing regulations thanks to the ACA. But on top of this, several hundred consumer-oriented bills are now being introduced in Congress annually, and about 25% are being passed. These tend to broadly extend the authority of the FDA, FTC, USDA, PCA, OSHA, OEO, etc. In addition, there are consumer agencies in all 50 states, 50 major cities and 20 countries.

Some activist agencies are extending their authority, even without legislative authority, through a more liberal interpretation of existing laws, especially the FTC in areas of advertising (children,

nutritional advertising, substantiation of claims, corrective advertising). Congress will extend the FDA's authority to include nutritional labeling, open dating, unit pricing, revision of the GRAS list, etc. The Food Surveillance Bill will pass in 1975 or 1976, extending regulations and inspection of food processing plants to every aspect of the industry and forcing many small operations and imported foods off the market. In other areas (Affirmative Action, OSHA, PCA) the emphasis will move to more frequent inspection and a more rigorous effort to achieve compliance.

Implications. There may be a number of implications in these regulations for individual FSB's and their personnel, plants or products which should be included in the five year plans. We also might note, as a general observation, that Pillsbury must operate more openly than in the past with respect to ingredients, labels, costs, personnel, plants, profits and many other areas. Another by-product of regulation will be growing standardization and more competitive pressure on prices. Higher costs will also follow from new regulations. If small businesses are forced out, Agri-Products may find itself dealing with fewer but larger customers. On the positive side, many small companies or importers may be forced off the marketplace by regulatory requirements and these may become attractive acquisition candidates for the consumer businesses.

Technology

Forecast. The major technological areas which could have an impact on Pillsbury over the present plan period are: hydro-processing, microwave, retort pouches, artificial sweeteners and semi-moist food technology. Hydro-processing represents Pillsbury's only proprietary process and leverage in the search for more abundant protein sources. Microwave technology should grow in importance because it offers the consumer or foodservice operator great convenience and it is an efficient energy user compared to other means of cooking. Retort pouches, as an alternative preservation technique to canning or freezing, are gaining considerable acceptance in Europe. They have suffered some food safety problems, but will likely jump the Atlantic despite the vested interests of U.S. canners, frozen food companies and packaging companies because they offer quality and convenience. New artificial sweeteners have been receiving government approval and cyclamates may soon be restored to some limited uses. The weight control area, which has languished in the uncertainty over artificial sweeteners, should take off in the next five to ten years. Semi-moist foods are significant primarily because they are attracting a good deal of attention from our competition in the food processing industry and because of the potential applications to baked goods.

Implications. Five year plans should anticipate these and other new technologies. For example, hydro-processing offers Pillsbury some interesting opportunities, alone or in joint

ventures, but at high investment levels; artificial sweeteners could be either an opportunity or a hazard depending on whether they are exploited by Pillsbury or our competitors; and retort pouches are an area where we have lead time on our competitors but no plans to exploit this advantage.

Demographics

Forecast. As previously reported, the 25-34 year old young adult market is the fastest growing segment in a population which is otherwise showing almost imperceptible growth or change.

Implications. With the overall population growing at less than 1% a year and per capita caloric intake constant or declining, the only food categories which offer meaningful growth are those which benefit from shifting consumer tastes or from changes in demographic mix. The young adult market is important from both these standpoints, i.e., it is a growing market and the value systems, lifestyles and consumer preferences of young adults tend to be different from other segments of the population.

Changing Values and Lifestyles

Forecast. The political, economic, and energy crises of the past couple of years have not reversed the move towards new values and a non-traditional view of the family, although change is not proceeding as rapidly as it did during the Vietnam years. The litany of the new values and lifestyles of the post industrial, post sensate society is becoming a familiar one: interest in individual expression and development, the importance of self-fulfillment and leading a 'rich, full life', blurring of the sexes and female careerism, rejection of authority and institutions, importance of education and knowledge, insistence on honesty, equity and fair value, new naturalism and living in harmony or in balance with nature, etc. The manifestations of these values are also expected to continue to grow in importance: interest in novelty and change, concern for personal appearance and physical fitness, liberal sex attitudes, singles living and/or smaller families, demand for leisure and meaningful work experience, etc.

Implications. The strength of the movement towards new values and lifestyles is such that it should override temporary economic concerns. For example, the basic underlying trends towards physical fitness and personal appearance will outlast short-term economic considerations which have caused increases in the consumption of starch, cereal foods. To take another example, the pressure for meaningful work experiences and leisure will survive what may be a temporary overemphasis on higher wages and benefits. In still another example,

there is already a resurgence of interest in away-from-home eating despite a rise in formal in-home eating occasions last year. We can conclude that our historical business base in grain, sugar and potato-based products, designed for use in formal meal situations and lacking in such benefits as convenience or portion control, remain threatened by value and lifestyle trends. The Consumer and Agri-Products companies should respond to these changes in their long range plans. The other FSBs, while perhaps less directly affected, should also review their strategies to see that they remain in sync with evolving value systems. Finally, all businesses should review their personnel, consumer communications and environmental programs from the standpoint of changing values and lifestyles, the most important of which is the changing role of women. As a corporation, we simply have not adequately addressed the marketing implications of the changing role of women!

A & SP

Forecast. We suggested earlier that economic conditions would favor a shift from push to pull, from price and trade promotion to media and consumer promotion. However, the competition for available media will make this a demanding task. The growing importance of working women and men in the food purchase decision will reduce the utility of daytime T.V. and traditional print media. There will be a limited amount of network prime time T.V. available (only three networks) and more companies competing for the time, so T.V. will become much more expensive. This puts a premium on the quality of media efforts. Ads must contain outstanding creative messages for maximum impact. Segmentation (geographic, lifestyle, product usage) is a must. New approaches to marketing must be developed (cable T.V., point-of purchase, mail) and some old methods re-examined (radio). Brands and franchises must be re-examined to see if they communicate the intended image.

Implications. Where the Pillsbury product is the number two or three brand in the market, the need for improved quality and focus in advertising is even more important. Since it's unlikely that we can outspend the leaders, Pillsbury must outperform them in quality of effort or via market segmentation. In some markets we have proliferated our trademarks (specialty biscuits, cake mixes, sweeteners). These should be reviewed to make sure we have segmented the market in a meaningful and productive way, or else the lines should be consolidated for sharper focus. Burger King now has an advantage over every competitor in its field except McDonald's, and their task is to translate this spending power into higher volumes. The alternative of licensing the use of some trademarks such as Figurines, Funny Face, Mr. Potts, etc., should be explored as a means of expanding the franchise faster than our own usage permits.

Transportation

Forecast. A number of areas of uncertainty continue in the U.S. Transportation system. Several railroads remain in bankruptcy with a number of others in very poor financial condition. Federal intervention is already assured in the northeast corridor by F78 (perhaps a welcome relief from chaos). The financial troubles of railroads will continue the trend toward upgrading or eliminating marginal business by restricting or eliminating transit and rapidly increasing rates on foodstuffs. Low rates of return on rail equipment will continue to push the burden of equipment ownership back on shippers. Any significant fuel shortages combined with higher prices could restrict the distances over which it will be feasible to ship by truck. Barges will remain as an important transportation method for moving bulk grain and feeds to Gulf port export facilities despite possible waterway user charges. Northwestern railroads will continue in their attempt to develop export movements through West Coast export facilities. Transportation rate structures are forcing a gradual shift of production and storage facilities from point of origin to point of destination.

Implications. Pillsbury will find itself increasingly involved in the ownership or lease of rail and barge equipment to support its existing businesses. Any decision to become involved in a grain export facility will add further requirements for investments in transportation equipment as we scale up our involvement in these markets. Further build-up of milling capacity in large population centers could pose a competitive threat to our older facilities which are largely located in grain producing regions. In warehousing, we may have to participate in more cooperative facilities with other supermarket suppliers in order to adjust to shifting transportation patterns.

Summary of Inflation Rates

The following inflation factors should be used by all FSB's in preparing their F76-F80 financial projections:

	<u>F76</u>	<u>F77</u>	<u>F78</u>	<u>F79</u>	<u>F80</u>
Overall Inflation Rate	6.5%	6.5%	6.0%	7.0%	8.0%
Wholesale Price Changes					
Farm Products	5.0%	3.5%	5.0	5.0	5.0
Energy	10.0	10.0	8.0	8.0	5.0
Industrial Products	3.0	4.0	5.0	6.0	6.0
wages/fringe benefits	9.0	10.0	9.0	9.0	9.0
Construction/Capital Goods/Land	8.0	10.0	10.0	10.0	10.0

TIMETABLE

The timetable for the F76-F80 Plans is designed to have the FSB's write their plans in a concentrated time span and be through the review phase by Thanksgiving. The planning process continues at the corporate level towards a March 2nd Board Presentation, but FSB's should be free to move on to their Annual Plans as of November 26th. Exceptions to this rule may arise if decisions reached in the Executive Office Reviews necessitate major revisions in an FSB's Financial Projections, and a feedback loop is built into the schedule from November 26th to December 31st to accommodate this prospect. The specific dates for the F76-F80 Plans are as follows:

<u>Event</u>	<u>Schedule</u>
1. Planning Department Issues Instruction Manual, Environmental Assumptions	September 2
2. FSB's Write Plans	September 2 - October 15
3. Planning Department Consolidates/Analyzes Plans	October 15 - October 31
4. Executive Office Reviews	November 3 - November 26
5. FSB's Revise Financials If Necessary	November 26 - December 31
6. Planning Department Reconsolidates FSB Plans, Prepares Corporate Strategic Plan	January 1 - January 28
7. Review Corporate Strategic Plan	January 29 - January 30
8. Revise Corporate Plan If Necessary	February 2 - February 14
9. Mail to Board	February 18
10. Board Presentation	March 2

Appexdix IV. Congressional Seminar on Corporate Planning:
Agenda, List of Participants, and Summary of
Proceedings

The Library of Congress

Congressional Research Service

Washington, D.C. 20540



February 13, 1976

TO: House Committee on Merchant Marine
Fisheries
Subcommittee on Fishers and Wildlife Conservation
and the Environment
Attn: Mr. James Spensley

House Committee on Science and Technology
Subcommittee on Environment and the Atmosphere
Attn: Mr. Tim Lynch

FROM: Clay H. Wellborn, Specialist *CHW*
Government Division
(Frederick L. Scott, Assistant Division Chief)

SUBJECT: Seminar on Corporate Planning

Enclosed is a summary of the issues discussed at the seminar on corporate planning held at the Library of Congress pursuant to your request on December 11, 1975.



The Library of Congress

Congressional Research Service

Washington, D.C. 20540

SUMMARY OF PROCEEDINGS

Congressional Seminar

LONG-RANGE PLANNING IN THE PRIVATE SECTOR:
WHAT CAN THE FEDERAL GOVERNMENT LEARN

Library of Congress, Whittall Pavilion, December 11, 1975

This is based upon a seminar which was organized for and in accordance with instructions of the Subcommittee on Fisheries and Wildlife Conservation and the Environment, House Committee on Merchant Marine and Fisheries and the Subcommittee on Environment and the Atmosphere, House Committee on Science and Technology.

The Member requesting it is confidential and its publication and is not intended to represent the position of the author or the Congressional Research Service.

Clay Wellborn
Specialist in American National Government
Government Division
February 18, 1976

Congressional Seminar

LONG-RANGE PLANNING IN THE PRIVATE SECTOR:
WHAT CAN THE FEDERAL GOVERNMENT LEARN?

Library of Congress, Whittall Pavillon, December 11, 1975

SUMMARY OF PROCEEDINGS

Introduction

On December 11, 1975, the House Committee on Merchant Marine and Fisheries, Subcommittee on Fisheries and Wildlife Conservation and the Environment, and the House Committee on Science and Technology, Subcommittee on Environment and Atmosphere, held a joint seminar at the Library of Congress on the topic: "Long-Range Planning in the Private Sector: What Can the Federal Government Learn?" The purpose of the seminar was to provide an opportunity for informal discussion among corporate planners and congressional staff on the applicability of private approaches to planning to governmental long-range planning needs.

The sponsoring subcommittees' agenda for the seminar was divided into a morning session and an afternoon session. The agenda for the morning session was designed to focus on alternative definitions and usages of the term "planning," on aspects of the planning process in the private sector, on considerations related to instituting the planning process, and on the applicability of private sector planning approaches to Federal governmental needs. The afternoon session consisted of discussion of what should be considered in designing Federal planning institutions, i.e., a planning institution's relationship to the Executive Branch as a whole, to individual executive agencies, to the Congress and to the private sector, and the organizational structure of such an institution. The agenda is given as Appendix I to this summary of proceedings.

Participants in the seminar, who are listed in Appendix II, were a group of planning officers from several major U.S. corporations as well as representatives from private "think-tank" and consulting organizations and from congressional agencies.

MORNING SESSION

The Seminar was opened by Norman Beckman, Acting Director, Congressional Research Service, who made brief welcoming remarks on behalf of the Congressional Research Service to the participants in the seminar. Dr. Beckman reviewed the general purposes of congressional seminars at the Library of Congress.

Representative George Brown, Chairman of the Subcommittee on Environment and the Atmosphere of the House Committee on Science and Technology, addressed the seminar briefly, emphasizing the growing congressional awareness of the need for a long-range time horizon in considering public policy issues and for a capacity to assess and plan for the long-range impacts of governmental decisions. He said that the seminar is aimed at improving congressional understanding of private sector planning practices which may have applicability to Federal governmental needs.

Following Rep. Brown's remarks, Mr. James W. Spensley, counsel to the Subcommittee on Fisheries and Wildlife Conservation and the Environment of the House Committee on Merchant Marine and Fisheries, reviewed the activities of the two sponsoring subcommittees leading up to their joint study of long-range planning. He described the elements of the joint study, in which this seminar is an important part.

The discussion for the morning was moderated by Mr. James Brown of the Conference Board. The summary of the morning's discussion follows the structure of the Subcommittees' agenda.

Agreement on Operating Definitions and Parameters

The agenda offered a number of definitions of planning, including policy planning, strategic planning, and operational planning. It also presented a definition of forecasting. These definitions were not entirely satisfactory to some of the seminar participants, who preferred to define planning more generally as determining unambiguous ends, allocating resources among those ends, and iterating until ends and resources are compatible. This could be called "a dialogue between ends and means." Two modes or forms of planning were discussed--normative planning, which is planning to carry out a mandated or authorized course of action ("Please do this: _____"), and descriptive planning, which is conditional ("What if _____?"). Normative planning is predicated on a directive to meet specified objectives. Descriptive planning is aimed at assessing the likely outcomes or progress toward an objective should certain specified conditions prevail. Short-range planning is said to be entirely normative, since it is operational.

During the course of discussion of normative and descriptive planning, one participant expressed concern that even though we talk about policy planning, we do not have a good definition of "policy." Confusion is inevitable, he asserted, unless the term is more clearly defined. Another participant said that such definitional problems may be interesting, but they are not central. The goal, he said, is to devise ways to increase the rationality of decision-making by improving our ability to anticipate, and to foresee the first and second order results of decisions.

It was determined, following this discussion, that the day's seminar was to be aimed at what was defined as descriptive planning, rather than at normative planning.

II. Planning the Planning Process

Subcommittee staff was concerned that planning may tend to reduce the flexibility of an organization and its ability to respond to new conditions. Participants did not feel that this was a serious problem, since descriptive planning was the focus of interest. Normative planning could have this result, but not necessarily. Lack of flexibility would result if there were no contingency planning conducted, but it was assumed that contingency planning was an important and recognized part of an organization's overall planning operation.

A principal point made repeatedly by members of the group was that it is a mistake to insulate planning from the decision-making process, that the connection between planners and doers is critical. In this regard, the exceptional example of Theodore Vail, of American Telephone and Telegraph, was cited as a kind of hero story among corporate planners. Vail was an individual who was a planner and a doer. The planning function and the decision-making, executive function were integrated in one individual. The desirability or practicability of such an integration of planner and decisionmaker was discussed at some length. Various understandings of the appropriate role of the planner emerged out of this discussion. One of the functions of the planner in a corporation is to point out relevant information that would be of use in making more rational corporate decisions, information that should be used but might be overlooked if the planner did not identify it and present in a usable form to decisionmakers. In this sense, planners should be "input oriented" toward

the decisionmaking process. The institutional problem is to establish such arrangements that a "hero" such as Vail is not required in order to achieve reasonable corporate decisions.

This discussion also led to further discussion of what good corporate planning is. Some participants saw the goals of the corporation as (1) to survive, (2) to prosper and perhaps to grow, and (3) to do these things on terms such that its institutional integrity and prospects are sound. Others said that the goal was to maximize return on investment, nothing more, nothing less. Good corporate planning would be planning that advances these purposes. But one participant said that more than these considerations, the good corporate planner must have a vision of the corporate role in society, that playing a contributory role in society is the corporation's highest goal. Without such a vision of social role, the corporation will not survive.

III. Instituting the Planning Process

Under this agenda item, two issues were discussed--handling discontinuities and incorporating subjective judgments.

In order to handle surprises or "discontinuities" to be faced by the top management of an organization, contingency planning must be well developed as well as an early warning system to minimize problems which are unforeseen. Such an approach can give advance attention to potential problems or opportunities and design appropriate responses. Real discontinuities can't be foreseen, however, and this requires a flexible approach to planning and organizational structure to allow quick response with such discontinuities appear.

Participants said that there are several methods for translating subjective judgements into forms that can be handled in formal, numerical techniques; but a firm must tailor its methods to meet specific circumstances.

Ultimately there are no techniques for making final judgments. Top management has to make final choices. The planners' job is to lay out the alternatives, their likely costs, and their likely benefits. Top management is paid to have good judgment and to use it.

IV. Establishing a Federal Long-Term Planning Process

At various points during the discussion, the differences between planning in the corporate sector and in the government emerged. Some participants say such a difference between the corporate environment and the governmental environment that they felt that methods, techniques, and approaches to corporate planning are not really applicable in the governmental situation. Others believed that the basic approaches of planning were clearly applicable in spite of the differences. Indeed, some of the differences may not be as clear as a first look would lead observers to believe. One participant characterized the problems facing planning in the Federal government as follows: First there is a basic distrust of forecasting in the bureaucracy and in the Presidency. There is little communication between those in the bureaucracy who let and monitor contracts for the development of forecasting techniques and those who would use the product of such techniques. Among the reasons for this lack of communication maybe an unfamiliarity with forecasters' jargon, an impatience with it, an unwillingness to understand it, or a failure on the part of planners and forecasters to package their message in comprehensible ways.

This participant went on to say that the real decisionmakers in government are very few. They are not in their Washington jobs very long. They come here from their roles as businessmen, professionals, or politicians. Their milieu is different from that of the forecasters and planners. They work on a 4-year cycle at most, but the effective planning time is cut down because of time spent learning what is going on--about a year--at the beginning and because of the time spent on the election campaign--about a year at the end of the 4-year period. This leaves two years, much of which is taken up by attention to annual budgets. Moreover, even if there were time for long-range planning, most of the real national problems cut across the entire Federal governmental structure, across disciplines, or across departments so that individual departmental planning is not adequate. Although there is some long-range planning for those matters that require long lead times, such as highways or weapons systems, there is just not much long-term planning in government. Another participant added to this point of view by saying that the continuity in government comes from the professional civil service, which he called the "techno-structure," but this has its problems because of strong incentives to avoid risks and protect individual positions as well as narrowly defined departmental interests.

Planning in the corporation was contrasted to this because of the more direct and simple overall goal of the corporation--maximizing return on investments--and because of the corporation's allegedly more centralized structure and because of the continuity of its management. The Federal government on the other hand operates with many objectives and with a need to understand the distribution of costs and benefits of its action across a wide range of people, institutions, and interests.

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In commenting on these views, one participant said that the problem is not that there are too few decision-makers; there are too many. There is a proliferation of power centers in Washington, and this leads to the fragmentation of Federal activity.

Another participant said that private business is also subject to short-term pressures and considerations just as government has its short-term pressures. Government, the competition, desires for promotion, objectives of individual managers, and consumer groups all apply short-term pressures on the corporation. The situation is not all that different from government's complex situation. There is a common need to define mission, understand the environment for action, set goals, design courses of action, and monitor progress.

AFTERNOON SESSION

The afternoon session of the seminar was opened by remarks from Representative Robert Leggett, Chairman, Subcommittee on Fisheries and Wildlife Conservation and the Environment, House Committee on Merchant Marine and Fisheries, who reviewed some of the environmental concerns of his Subcommittee and thanked the seminar participants for their willingness to take part in the discussion on long-term in planning government.

The afternoon's discussion, which was moderated by James Spensley, focused on ways to organize a Federal structure to carry out a descriptive planning process, setting forth alternative policy directions in environmental affairs. The work product of such an organization would be input to the deliberations of Federal policy decision-makers.

Objectives of the Institution

There was considerable initial discussion of whether the proposed institution was to be "national" or "Federal," a distinction which was not entirely clear to some participants. The participants who raised the question said that by "Federal" they meant located within the Federal Government, operated by the Federal Government, responsible to the Federal Government, and dealing with issues that come to the Federal Government. By "national" they said that they meant serving the interests of all sectors of society, the universities, government, labor, industry, commerce, etc. After extended discussion on whether this was an important distinction it was determined that the proposed organization to be treated in the course of the afternoon's discussion was a Federal institution with a national scope to its planning, and with emphasis on environmental matters. (Later in the discussion a question was raised, but not definitively answered, as to whether the organization's charter was to include a mandate to plan or conduct policy analysis for economic, social, and other dimensions of national life along with environmental matters or include a mandate to illuminate these other matters in the process of analyzing environmental policy.)

There was some disagreement over the major issue of whether the institution should make policy recommendations or whether its mandate should limit it to policy analysis and forecasting in order to lay out for policy decision makers the nature of problems to be faced, policy options for meeting those problems, and the likely impacts of policy decisions. The group generally favored the latter approach, a "descriptive" approach.

II. Placement of the Institution

The appropriate placement of the planning/policy analysis institution within the framework of government dominated the afternoon's discussion. The criteria for placement of the institution mentioned during the discussion were sometimes conflicting and led to a fundamental dilemma as to where the institution should be located. These criteria were the following:

1. The institution must be close to and have the sponsorship of the decisionmakers.
2. It must be free from political pressures.
3. It must be free from pressures to focus on short-term matters rather than on long-term matters.
4. It must have managerial continuity beyond the election cycle.
5. It must not violate the constitutional principles of separation of powers.

There was no consensus as to where the institution should be placed. Some participants felt strongly that the institution should have the sponsorship of the Executive Branch, and that it should be placed in the Executive Office of the President, close to the top decision-making apparatus of the White House. Others felt that a linkage to the Congress was essential. Still others objected to placement within either of the two branches, fearing political pressures and an erosion of the institution's long-range vision by pressures to address short-term problems. Those who favored an independent agency were countered by those who felt that such a separation from either the Executive or Legislative Branches would lead to ineffectiveness.

The following comments are illustrative of the direction and range of the discussion of placement of the institution:

This kind of institution must have access to the highest reaches of government. The typical independent agency is not close enough to the Presidential decisionmaking process. The Federal Reserve Board is a model of the kind of institution that would be required.

The institution should be part of a planning institution with a broader mandate than simply environmental planning and policy analysis.

The best planning systems are close to the person who makes the decisions. This implies putting it in the Executive Branch, in spite of a potential loss of credibility. It must be in the President's office in order to minimize duplication, haggling and to have some clout. Its clout has to be strong enough to handle OMB.

The institution should be linked to the Congress. Look at what happened to the National Goals Research Staff in the White House.

The institution should not be linked to either the White House or to the Congress. Such linkages would give rise to political pressures the institution could not withstand.

Corporate planners' expertise comes from the centralized bureaucratic mode of operation of the corporation, which is different from the kind of situation that exists in government. In our experience planning must be sponsored by those who have the authority and power to carry decisions through. Perhaps the decision on placement should come after we are faced with a tangible issue around which the government wants to plan. Appropriate placement would depend on the nature of the specific issue.

OTA is not a good model for placement. Nobody listens to it.

Placement must be such that long-range planning is linked with short-term budget decisions.

The institution should not be a Domestic Council sort of thing. The issues that must be faced reflect the unified nature of domestic and foreign affairs and our integration into the world economy and environment.

Because of the dilemma on placement, the moderator decided to assume for purposes of further discussion that the institution would be placed in the Executive Office of the President.

III. Setting the Agenda

There was brief discussion about who should set the institution's agenda. One participant said that much of the agenda would be set by emerging problems, by foreseen problems, and by the automatic termination of Federal statutes.

Another participant pointed out that the agenda should be set according to the nature of the various levels of activity within the institution. For activities that are clearly a matter of staying informed, professionally "on top of things," the agenda would be set by individual professional members of the institution's staff. For activities dealing with the identification and resolution of incompatibilities among policies, the identification of mutually reinforcing purposes or activities--perhaps these could be called policy analysis activities--the agenda would be set in part by those who use the institution's services and in part by its institutional managers. For activities that deal with setting broad purposes, for defining constraints, for moving into new areas, this agenda is the prerogative of the chief executive officer. If, for example, the institution is located within the Executive Branch, the prerogative would belong to the President. As in the placement discussion, however, some participants were not happy with Presidential determination of any aspect of the institution's agenda, fearing undue political pressures.

IV. Personnel

The only personnel issue that was discussed was that of the need for continuity of the top management of the planning institution beyond the election cycle of the President and Members of Congress, especially the presidential cycle. This was seen as necessary in order to avoid pressures for attention

to short-term problems rather than long-term problems. One participant offered the Board of Governors of the Federal Reserve System as a model. If, however, the planning institution is part of the Executive Office of the President, such an arrangement might not be acceptable to the President.

V. Interaction with other Institutions

This agenda item did not receive any specific discussion due to the extent of the discussion of placement of the planning institution.

VI. Funding

The moderator determined that it was necessary to overcome the dilemma about placement of the planning institution by making a decision to continue the discussion under the assumption that it would be placed in the Executive Office of the President. This implies public funding, but nevertheless there was some discussion of alternate forms or channels for funding a planning operation. The options that were identified included (1) public funding through congressional appropriations, (2) public funding by appropriation of an endowment, the income from which would support the institution's operations, (3) private funding, (4) some combination of these approaches, or (4) A variant on the public funding approach that the participant called "piggy-backing". Using this approach the planning institution would receive a proportion of its funds, perhaps only during the initial years of its operation, by way if its own congressional appropriation. The remainder of its funding would come from individual agencies using its services. Appropriations to these agencies would be earmarked so that a set proportion of individual agency funds would be required to the planning institution.

VII. General Observations

There was a clear awareness on the part of all participants that the placement problem was left unresolved by the discussion, and that this problem should receive additional attention. Some, aware of the limitations of placing the institution in the Executive Branch or in the Legislative Branch, saw some hybrid arrangement as perhaps promising. Others felt strongly that the need to tie planning with the doing of the Federal government's business was the dominant need and that whatever the disadvantages, the planning institution should be in the Executive Office of the President.

The discussion concluded with expressions of the need to design a planning institution such that it would contribute to democratic processes of government.

There was an interesting dissent from this exercise in designing a planning institution. One participant said that the real problem was not to design a new institution; it was to figure out ways of involving the various actors in the policy decision-making process in policy analysis itself. This was true he said, at all levels in the federal system. Everybody in such positions should be policy analysts. They ought to have to go through the policy analysis process themselves.

Congress of the United States

House of Representatives

Washington, D.C. 20515

Congressional Seminar

LONG-RANGE PLANNING IN THE PRIVATE SECTOR:
WHAT CAN THE FEDERAL GOVERNMENT LEARN?

Library of Congress, Whittall Pavilion
December 11, 1975

AGENDA

Morning Session

Time: 10:00 a.m. - 12:00 noon

Presiding Chairman: The Honorable George Brown, Chairman
Subcommittee on Environment and the
Atmosphere
Committee on Science and Technology
U.S. House of Representatives

Moderator: James Brown, The Conference Board

Afternoon Session

Time: 1:15 p.m. - 4:30 p.m.

Presiding Chairman: The Honorable Robert Leggett, Chairman
Subcommittee on Fisheries and Wildlife
Conservation and the Environment
Committee on Merchant Marine and Fisheries
U.S. House of Representatives

Moderator: James W. Spensley, Counsel
Subcommittee on Fisheries and Wildlife
Conservation and the Environment
Committee on Merchant Marine and Fisheries
U.S. House of Representatives

MORNING SESSION

- | | | |
|-------|---|--|
| 10:00 | Welcoming Remarks | Norman Beckman, Acting Director
Congressional Research Service
Library of Congress |
| 10:05 | Chairman's Comments | The Honorable George Brown
U. S. House of Representatives |
| 10:15 | Overview of Long-
Range Planning Study | James W. Spensley, Counsel
Subcommittee on Fisheries and Wildlife
Conservation and the Environment
Committee on Merchant Marine and Fisheries
U. S. House of Representatives |
| 10:30 | Morning Workshop | Moderator: James Brown, The Conference
Board |

ISSUES

I. AGREEMENT ON OPERATING DEFINITIONS AND PARAMETERS

- A. Policy planning includes identifying the basic purposes of the organization and establishing the guidelines that determine the internal environment for operations. It is general and tends to reach across a long time span.
- B. Strategic planning involves changing corporate direction and reallocating resources to accomodate a significant change in the operating environment.
- C. Operational planning involves planning the goals and use of resources to achieve established company objectives.
- D. Forecasting is the process of identifying and projecting alternative future scenarios.

II. PLANNING THE PLANNING PROCESS

- A. Comprehensive planning per se requires a trade-off with flexibility and responsiveness in the process.
- B. The selection of planning tools and techniques is critical to the outcome of the process.
- C. Centralization of policy or strategic planning is critical to the effectiveness of the process.
- D. Reliability of process outcome is a function of the range and diversity of informational inputs and sources.

III. INSTITUTING THE PLANNING PROCESS

- A. It is "impossible" to incorporate future discontinuities in the development of future scenarios.
- B. How do you incorporate or quantify subjective judgements into the planning process?
- C. What criteria should be used to select the significant planning issues an organization is to address?

IV. ESTABLISHING A FEDERAL LONG-TERM PLANNING PROCESS

- A. Federal planning is not a theoretical question of yes or no, but rather a question of how much is needed to deal with growing future uncertainties and scarcities.
- B. What appear to be the barriers to systematic long-range planning in the Federal government and how might they be overcome?

AFTERNOON SESSION

- | | | |
|------|---------------------|---|
| 1:15 | Chairman's Comments | The Honorable Robert Leggett
U. S. House of Representatives |
| 1:30 | Afternoon Workshop | Moderator: James W. Spensley, Subcommittee on Fisheries and Wildlife Conservation and the Environment |

ISSUES

Structuring a Federal Institution

I. OBJECTIVES OF INSTITUTION

- A. Primary directive or mandate
- B. Functional responsibilities

II. PLACEMENT OF INSTITUTION

- A. Executive Office of the President
- B. Independent agency
- C. Congress
- D. Private sector

III. ORGANIZATIONAL STRUCTURE

- A. Agenda
- B. Management

IV. PERSONNEL

- A. Representation
- B. Selection
- C. Capabilities

V. INTERACTION WITH OTHER INSTITUTIONS

- A. Public
- B. Private
- C. Functions

VI. FINANCING OF THE INSTITUTION

- A. Public
- B. Private
- C. Combination

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**LONG-RANGE PLANNING IN THE PRIVATE SECTOR:
 WHAT CAN THE FEDERAL GOVERNMENT LEARN?**

Library of Congress, Whittall Pavilion, December 11, 1975

PANELISTS

- Marvin Cetron, Forecasting International
- Donald K. Conover, Director of Corporate Planning, Western Electric
- Chester Cooper, Institute for Energy Analysis
- Douglas Costle, Assistant Director for Energy, Environment and
 Natural Resources, Congressional Budget Office
- Emilio Q. Daddario, Director, Office of Technology Assessment
- Gordon Dinsmore, Metropolitan Life Insurance Company
- Jerome Jacobson, Senior Vice President, Bendix Corporation
- Vernon Johnson, Vice President and Director of Corporate Planning,
 General Mills
- Abraham Katz, Director of Corporate Planning, International
 Business Machines
- John Osman, Senior Fellow, Brookings Institution
- Charles S. Overmiller, Chief Economist, Exxon
- Robert Schmidt, Director, Long-Range Planning, Pillsbury Co.
- James Brown, Conference Board
- James B. Webber, Director, Cambridge Research Institute
- George White, Vice President for Product Planning, Xerox Corporation
- Robert Wycoff, Vice President, Atlantic Richfield Company

FORECASTING AND FUTURES RESEARCH

INTRODUCTION

During the last 30 years, interest in long-range planning has been growing. Based on early successes during World War II and subsequent uses in defense systems and in private industry, government has been using planning and its methods to address a number of issues, including budgeting with the Office of Management and Budget, economics with the Council of Economic Advisors, and the environment with the Council of Environmental Quality. Congress is seeking improved planning capabilities in part through new committee resources, the Congressional Budget Office, the expanded analytical work at the Congressional Research Service, the Office of Technology Assessment, and greater use of the Government Accounting Office. For Congress to play an initiating role in anticipating problems and capitalizing on opportunities, it will need to combine sound forecasting capabilities with judicious use of the results.

Man's interest in forecasting and the future is not new, for from man's first perception of the nature of Time -- that the past is known but unchangable and the future is changable but unknowable-- man has been intrigued by the future. Adam was given the first forecast -- if he ate of the forbidden fruit, he would have to leave the Garden of Eden. Adam failed to heed the forecast, condemning his descendants to live with the consequences -- among them an endless search to "know" the future and avoid Adam's mistake.

Man's interest in the future has taken many forms that can be aggregated into three general approaches: first, non-logical methods; second, logical descriptions and speculations; and third, formal forecasting. Primitive man used non-logical or mystical methods such

as astrology, clairvoyance, and prophecy to predict the future. More recently man used more logical methods and speculation to describe utopian and distopian views of the future. These fictional views of the future, though very interesting, rarely provided any information on how to get from the world of today to the world of the future. Man's third approach to thinking about the future centers around formal forecasting designed to aid man in making the decisions which shape his future.

In the sections which follow, man's continual interest throughout history in forecasting and the future is illustrated. The material is not meant to be comprehensive or exhaustive, but merely illustrative of man's continual search for knowledge about the future. 1/

In the Appendix we have listed a small compendium of amusing forecasts that fortunately have not come true. They illustrate the need for thinking about the future in a more systematic and comprehensive fashion.

1/ Most of the material in the following section has been extracted from: Kelly, Patrick and others. Technological Innovation: A Critical Review of Current Knowledge. Atlanta, Advanced Technology and Science Studies Group, Georgia Tech [1975] 541 p. and a pre-publication copy of Cronish, Ed and others. The Discovery of the Future. Washington, The World Future Society [1976] 100 p.

HISTORY OF FORECASTING

Non-Logical Forecasting

In attempting to determine his fate, man has relied on a number of personages including the prophet, psychic, seer or clairvoyant and methods such as the deciphering of the entrails of slain animals. The Sumerians and Babylonians perceived the sky to be the dwelling place of the gods and that man's actions were directed by the gods from these quarters. The movement of the stars and planets were believed to foreshadow events on earth. Since early man expressed himself in pictures and images, it was logical for him to expect his gods to do the same. Thus, it was natural for him to regard the course of the stars as a divine kind of picture writing.

Probably the oldest example of future-oriented literature is, the Egyptian Book of the Dead. It discusses the Egyptian belief about the destiny of human beings through eternity. Rules of conduct for making future life on earth better through the management of society are discussed in The Priest of Senefou (2900 B.C.).

Probably the best known oracle of the ancient world was at Delphi, a place near Mount Parnassus in Greece. Greeks who wished to consult the oracle of the god Apollo would present their questions in writing. The responses were given by a priestess, who sat on a sacred tripod in the inner shrine. The priestess' utterances were verified and edited by prophets and "holy men". Despite the ambiguity of the resulting forecasts, the oracle apparently had a thriving business for centuries.

One of the most powerful and persistent images of the future is preached by the Old Testament prophets on the resurrection of Israel.

St. Augustine developed from this image The City of God. It was an image to be fulfilled by the grace of God and mediated through the Christian church.

For the most part the ancients were not concerned about the future of their society, but about their individual fortunes. They consulted oracles and mystics in a manner similar to the way people today might consult palmists and astrologers. The ancient cultures did not change much, so common folk were not very interested in trying to explore the future of their society. "The ancients" methodology was mystical and dependent on divine revelations, unlike the rational or scientific methods of today's futurists who rely on data collections, statistics, social theories, computer simulations, etc.

Logical Descriptions and Speculation

Around the thirteenth century some serious thinking about the technical future began to emerge. Such evidence is found in Roger Bacon's statements (1256-66) about the possibilities of submarines, flying machines and talking and reasoning automata. Francis Bacon's utopia included mention of new technology but lacked technical substance. Francis Bacon was the first utopian writer to visualize the use of science to improve man's future. By contrast, Leonardo Da Vinci presents some brilliant technological forecasts that were based upon technical insight. However, Da Vinci did not specify the impact involved, while many of the utopians were concerned with the impact of the technical possibilities on mankind and society.

Speculation about future technologies in the form of science fiction and fiction about future social conditions began to emerge in the early 1800s. These writings include many forecasts about various technological possibilities, their impact and consequences, and potential societal reaction to each alternative. Some of the writings are fanciful and others are serious. Some contain thoughtful speculation and social concern while others are satirical and are meant chiefly to entertain the reader.

Hans Christian Anderson, who is best known for his children's tales, entertained readers in 1852 with speculations on the tourists of the future. They would be young Americans who would cross the Atlantic in steam-driven flying machines. With remarkable foresight, Anderson suggested that their slogan would be "See Europe in Eight Days".

The French author, Jules Verne, achieved his popularity by using science as the material for fiction. Verne based his mechanical contrivances on the best and latest work on scientific facts and principles of his day. In choosing a metal for the ship that was to take men to the moon, the characters in Verne's book consider one material after another. Finally, someone suggests that aluminum might be used. At that time, aluminum was known only as a rare metal, prohibitively expensive and unobtainable in useful form. However, through his research Verne discovered that aluminum possessed the material properties needed for the ship and that its production was practicable.

The writings of H.G. Wells also have made a lasting impression on society. His book Anticipations was a major speculative forecasting effort. He examined the factors which facilitate change in transportation, communications, the size of cities, warfare, etc., and foresaw the decline of horse-drawn vehicles and the coming of motor trucks as well as the importance of aviation in warfare. "Once the command of the air is obtained by one of the contending armies, the war must become a conflict between a seeing host and one that is blind." He also suggested that Great Britain would become an urban region held together by a dense network of telephones and tubes for parcel delivery.

In his novel The World Set Free, Wells forecast the discovery of artificial radioactivity, the liberation of atomic energy, the development of atomic bombs, and a world war fought by England, France, and America against Germany in which all the major cities of the world are destroyed by bombs. In a different vein, the forecasting efforts of Karl Marx and their subsequent impact on the world are well known.

Formal Forecasting

In the early 1900s sociologist S. Collum Gilfillan began to systematically study the forecasting process. He was probably the first person to study seriously the methodologies and to define forecasting based on emerging technologies (exploratory forecasting) and forecasting based on future requirements (normative forecasting). He recognized the need to build a data base, the use of trend extrapolation, and the principle of monitoring, while rejecting, "optimism," "utopian prophesying" and "wishful thinking" as highly misleading.

Shortly after his election in 1929, President Herbert Hoover named a Presidential Research Committee on Social Trends. In their final report

the Committee concluded that the ills of the nation were in large part due to the unequal rates of social changes in the twenties: growth in production exceeded growth in purchasing capacity and large corporations were growing faster than labor organizations. These unequal rates of change were perceived as the dominant cause of the Depression and its persistence. The report expressed deep interest in the social impacts of technology and made explicit the concepts of social impacts and costs. It recommended widespread economic and social planning as the only solution for a better future.

With the New Deal era of F.D.R., planning became a standard tool of government. Further advances toward the systematic use of forecasting techniques and the study of the future were made in 1937 when the National Resources Committee of the Department of the Interior, through their Science Committee, established a Subcommittee on Technology. This is perceived by some to be the first explicit effort by a major U.S. institution to link forecasting to planning and decision-making.

The Subcommittee on Technology's report, *Technological Trends and National Policy: Including the Social Implications of New Inventions*, was termed "the first major attempt to show the kinds of new inventions which may affect living and working conditions in America in the next 10 to 25 years." The subcommittee stressed that its concern was not so much with technology as with planning directed at the social effects of using that technology.

The Subcommittee's foresight in calling attention to the social impacts that might come from the mechanization of the cotton industry in the south was remarkable. Some of the text in the study follows:

"If we assume that cotton acreage will remain about the same, and that a successful machine will be produced in large quantities and sold to all who can afford to by, tenant farming as it now exists in the South would undergo change. Some tenants and sharecroppers would still be needed as laborers in the cotton fields, but many would need to turn elsewhere for a livelihood.

"Would they pour into the North and seek employment in industry?... Many of the people from the rural South have had almost no experience with industrial discipline and complicated machinery; could they be trained to useful and self-supporting employment?...

"The cotton picker would cut down sharply the greatest single source of employment for woman and child labor in America... How else, it may be asked, are these people to make a living?... Will northern industry move into the South and take up the slack in the labor supply?"

Almost 35 years later, former Secretary of Agriculture,

Orville Freeman, commented:

"...the displacement of large numbers of rural people by mechanization is more responsible for the big city problems which resulted in the burning of cities in the United States in the 1960s than any other factor..."

Arguments can and have been made disputing Secretary Freeman's ranking of responsible factors, but the relationship of a technological development and a social upheaval separated by four decades can be powerfully drawn. Once again, Orville Freeman's comments:

"I have visited cotton plantations in the American southland where in one year the labor supported by the plantations dropped from 100 families to five families. Some describe this phenomenon as efficiency and progress, proudly citing per capita output figures. Such an evaluation fails to consider the human and social costs of 95 black families with nowhere to go. They or their children made up the rioting mobs who cried 'Burn, baby, burn' in Detroit, Washington, Cincinnati, Cleveland, and Los Angeles."

Since the end of World War II, when in Jacob Bronowski's words, the atomic bomb brought civilization "face to face with its own implications," large scale serious efforts have taken place to make forecasting more of a science and less of an art. These efforts have become more widespread, organized, and sophisticated. They are an outgrowth of the 1945-50

period when man introduced atomic weaponry; Norbert Wiener spelled out the principles of self-regulating mechanisms and self-adjusting systems (cybernetics); the Atomic Energy Commission and the National Science Foundation were created; the concept of Gross National Product (GNP) was first used; Congress passed the Full Employment Act of 1947 and established the Council of Economic Advisors; and economist Wassily Leontief outlined the principles of input-output analysis. From a few small groups in the first "think tanks" formed during this period, forecasting has grown into a major new field. By one estimate, there are nearly 100 independent private organizations in the U.S. doing futures research, including profit and not-for-profit organizations. More than 30 public organizations featuring citizen participation are studying futures issues in states (e.g. Hawaii 2000) and regions. Many of the Fortune 500 corporations have forecasting and long-range planning departments.

Futures research is also being developed at colleges and universities - some 300-400 courses concerned with futures research are being offered. The field has 10 to 15 journals which regularly feature "futures" topics and articles. The Institute for Futures Research and Education (IRADES) annually publishes a directory of people, organizations, and activities in forecasting.

New forecasting techniques have been developed; older ones have been refined; and some practitioners describe techniques like trend impact analysis as second generation forecasting methodologies. In the section which follows some of these methodologies and their uses are described and discussed.

SELECTED FORECASTING METHODOLOGIES

Introduction

There are numerous forecasting methodologies and ways of organizing or arraying the methodologies. A 1975 Stanford Research Institute study identified 150 techniques from the forecasting literature. After trimming the more obvious and severe overlaps, they reduced the number to about 100. They then grouped these techniques under three broad categories of forecasting methods: techniques using historical trend data and projections; techniques based on models and simulations; and qualitative and quantitative techniques.

We have selected two forecasting methodologies from each category. The six selections were made by the study team. The methods - Delphi, cross-impact analysis, computer simulation models, trend extrapolation, scenarios, and trend impact analysis are described in the following sections. A general description and critique of the method is provided along with some applied illustrations and public sector applications of the method. A small list of related readings is also provided for each methodology. Because each methodology is unique and applied to different types of problems, the style or format in describing each methodology may vary slightly.

THE DELPHI

Delphi is a technique used to gather and process information and judgment from a group of individuals who are experts in a particular field or subject. It is generally considered to be a forecasting methodology, but it has had a number of other applications. ^{2/} Some of these are:

- To probe certain historical or current conditions where existing historical information is inadequate.
- To examine the significance of historical events.
- To develop and evaluate possible budget allocations.
- To identify causal relationships in complex economic or social phenomena.
- To produce organized lists or ideas or suggestions relevant to some stated problem topic. This may include the delineation of potential policy options and the pros and cons associated with each.

^{2/} Amara, Roy. Some Methods of Futures Research. WP-23 Menlo Park, Calif., Institute for the Future, December 1975, and Linstone, Harold A. and Murray Turoff, ed. The Delphi Method; Techniques and Applications. Reading, Mass, Addison Wesley Pub. Co., Inc. [1975] .

- As a communication device to probe consensus or differences.

The Delphi method was initially developed at the Rand Corporation by Olaf Helmer and Norman Dalkey in the late 1950s and early 1960s for scientific and technological forecasting. By one count over 2000 Delphi studies have been conducted. They have been designed to probe such diverse areas as economic trends, medical developments, societal change, employee benefits, educational developments, regulatory processes, and general corporate environmental factors. The Delphi technique or some variant of it has been used extensively in the United States, the United Kingdom, Russia, and Japan.

In a typical policy oriented Delphi, a group of respondents (experts) is selected and a questionnaire is prepared (the "Round 1" questionnaire), posing quantitative and qualitative questions about the future to be studied. Respondents generally are asked to provide their rationale or source of information for quantitative responses. A second questionnaire (Round 2) is then prepared and distributed; this round includes the questions from the first round, a statistical summary of the answers to each of the questions from that round (generally the upper and lower quartiles and the median of the distribution of responses to that point). Participants are then asked to

rank and evaluate these. It may also provide some new questions. A third round - generally a final one - may then be prepared. It generally repeats all or most of the questions of the second round and asks the participant to develop some policy options for various sectors. At this point, where applicable, the views of the respondents will either have converged somewhat or the reasons why convergence is unlikely will have been documented. Convergence is rare and of minimal utility if the underlying assumptions for most individual responses are not provided.

There are a number of basic variations to the Delphi, but the various Delphi techniques share three basic characteristics -- use of controlled feedback, use of sequential questionnaires and preservation of the anonymity of the respondents. Anonymity exists at two levels. Participants frequently are unknown to each other and in all cases the individual response is never attributed to particular individuals. In futures research, the Delphi method is often used instead of the traditional conference method, because conferences can produce such undesirable side effects as specious persuasion, an unwillingness to abandon opinions once they are publicly expressed, and the bandwagon effect of majority opinion.

Many variations are possible:

- Replace questionnaire with personal interview.
- Replace questionnaire with computer-assisted interview.
- Variation in the number of rounds.
- Variation in the number and types of information fed back to respondents.
- Allowing respondents to introduce new questions relevant to issues under consideration.

Joseph Coates, a futurist with the Office of Technology Assessment, notes that the Delphi is not a scientific tool, nor is it related to a scientific experiment or scientifically structured activity. "Delphi is not a way of drawing expert knowledge on expert's issues, but rather is an aid to dealing with those most crucial of contemporary societal problems; judgment and wisdom about the future." It is the modern equivalent of the essay and is not to be confused with a psychometric test, i.e., I.Q. tests. 3/

Delphi may be a useful instrument to achieve the objectives stated earlier by Roy Amara, the President of the Institute

3/ Coates, Joseph F. In Defense of Delphi. Technological Forecasting and Social Change, v. 7, no. 2, 1975: 193-194.

for the Future, as long as one understands that it is not a scientific instrument, and that its value may be in forcing the various "stakeholders" or individuals concerned with a particular issue to articulate and discuss the underlying assumptions of that issue. It is an instrument that appears scientific, but in reality is not. 4/

Critiques of the Method

Any evaluation of the Delphi process or of a particular Delphi must be made in light of the goals sought and the alternatives available to meet those goals. The analyst needs to address the questions "Who is it that should communicate about the problem; what alternative mechanisms are available for that communication; and what can we expect to obtain with these alternatives?" Some of the advantages are:

- Allows for interdisciplinary communication of experts from remote geographical locations.
- Avoids the psychological problems of direct group interaction such as the bandwagon effect, specious persuasion, domination by quantity or strength of personality.
- Focuses attention directly on the issue.
- Lends itself to qualitative and quantitative data.

4/ Linstone, op, cit., chapters 1 and 8.

- May expose real agreements and disagreements among respondents.
- Lends itself to problems which require subjective judgments on a collective basis.

Some of the problems or disadvantages with the Delphi are:

- Lacks the stimulation of face to face confrontation.
- Subject to misinterpretation or manipulation by the Delphi investigator.
- It is extremely slow, time consuming, and expensive.
- Panelist may not be able to communicate his views by a concise sentence, etc.
- Emphasis on consensus may suppress extreme points of view.
- Defining and selecting the "expert" is currently a poorly understood and undefined process.
- Material is presented as the work of experts, but in many investigations it is the casual opinions of unexperienced persons with no expertise in the technical areas.

Illustrations of the Method

With over 2000 Delphi studies having been conducted, there are a large number of potential illustrations.

Figure I was drawn from a Study of Potential Changes in Employee Benefits. For this particular study, the participants in the study were provided with historical data, in the form of charts, and were asked to forecast how the charts would change over time. They also were asked to provide the reasons for their forecast. Additional examples of a Delphi and the results of a Delphi are shown in the methodological annex at the rear of this chapter.

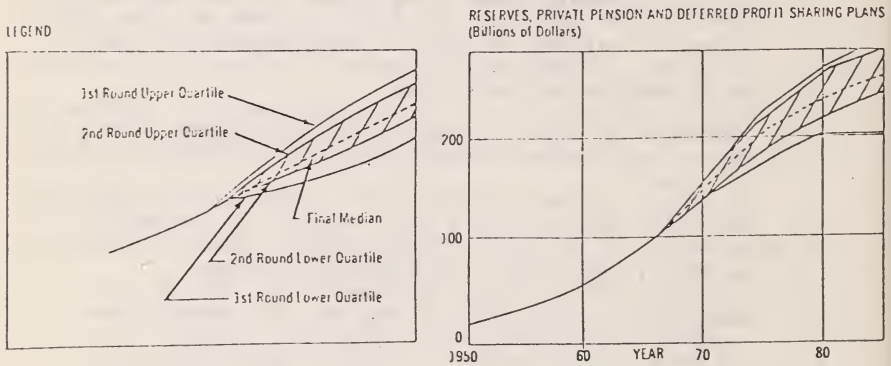


Figure I 5/

5/ Amara, op. cit., p. 8.

Application of the Method to Public Agencies

There are numerous public agency applications of the Delphi. The Offices of New Communities Administration and the Assistant Secretary for Policy Development and Research of the Department of Housing and Urban Development, utilizing the Center for Futures Research of the University of Southern California, conducted a Delphi investigation on the Future of New Communities. 6/ The purpose of this study was to identify realistic policy options for the New Communities Program of HUD in light of the program's recent problems - an economic recession, inflation, short money supply, difficulties in getting local approvals, and consistent overruns in costs. Specifically, the study aimed at answering selected questions pertaining to:

1. Present or future constraints upon the development of new communities in the United States;
2. Present or future limitations on the effectiveness of the HUD Title VII New Communities Assistance Program;
3. Present or future areas toward which federal assistance could be appropriately directed to provide clear, large-scale development benefits; and
4. Potential future impacts that should be anticipated relative to the policy framework manifested in the current Federal program of loan guarantees for new communities.

6/ Nanus, Burt and others. The Future of the Federal New Communities Program. Los Angeles, Calif., Center for Futures Research, Graduate School of Business Administration, University of Southern California. October 1975.

Delphi participants included individuals qualified in matters of government policy, community development, and in the general area of housing and urban trends.

A policy oriented Delphi 7/ and related planning conference 8/ were in part funded by the National Institute for Drug Abuse. The objectives of the Delphi study were: 1) determine or develop a range of possible alternatives in drug abuse policy; 2) correlate informed judgments on subjects which relate a wide range of disciplines to drug abuse; 3) develop a body of knowledge with respect to the current state-of-the-art in the field of drug abuse. Two other objectives which were related to the technique of the study itself were to explore the possibilities of applying this technique on an as-needed basis in the field of drug abuse.

This Delphi formed the base for a National Drug Abuse Policy Meeting in June, 1975. This meeting was conceptualized as a means of exploring the feasibility of using structured group meetings (in this case a version of nominal group process and Delphi to discuss and formulate national drug

7/ The Preliminary results of this study are described by Irene Jillson, the Director of the study. See Linstone, op. cit., p. 124-159.

8/ Further information on the planning conference may be obtained from Richard Bucher, National Institute for Drug Abuse, Washington, D.C.

abuse policy).

The policy research group of the Canadian Government's department of Public Works utilized a Delphi involving forty-six respondents to forecast federal employment to the year 1985, in terms of distributions by two regional areas of Canada and by government function. ^{9/} This study was intended to provide not only a secondary confirmation of gross parameters forecasted by standard statistical methods but also to project finer detail than historically available. In addition, the Delphi was used to capture the assumptions underlying such forecasts. Certain key areas potentially impacted in a major way by government policy were explored in depth. An example was the issue of decentralization of employment outside Ottawa. For questions such as this it was felt that the Delphi would provide more meaningful results than techniques using statistical data. The report contains quantitative estimates and independently evaluated assumptions underlying the estimates and issues.

In developing their stateside multimodal transportation plan, the California Department of Transportation sponsored a Delphi study by the Center for Futures Research at the

^{9/} While this study has been completed and documented, the report has not yet been released to the general public.

University of Southern California. 10/ The participants identified developments in seventeen societal categories that would have a high degree of expected relevance in transportation planning.

Developments were to include 10 events which were likely to have a reasonable chance of occurring within the next thirty years that would have a major impact on transportation planning if they occurred, and 2) trends which were likely to deviate from commonly accepted values where such deviations would have an impact on transportation planning. The initial inquiry of the panel resulted in identification of 263 developments (93 events and 170 trends).

In the second part of the Delphi inquiry, the panelists were asked to make quantitative forecasts about these developments. In the case of events, they were asked to estimate the earliest, most likely, and latest time (including never) at which the event would occur. In the case of trends, forecasts of trend values in 1985, 1995, and 2005, were requested.

10/ Gray, Paul and Olaf Helmer. Summary Report, California Futures Study -- Analysis of Impacts for Transportation Planning. Los Angeles, Calif., Center for Futures Research, Graduate School of Business Administration, University of Southern California. November 30, 1974.

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CROSS-IMPACT ANALYSIS

Cross-impact analysis tries to predict the effect that some specific event (or Policy action) can have on the likelihood of another event occurring. It focuses on the relationship, if any, between any two individual events. It poses the question, "Does the occurrence of one event inhibit, enhance or have no effect on the occurrence of another event in the future?" The answer may be expressed in qualitative or quantitative terms. The events included in a cross-impact analysis may be technological, social, economic, political, or any combination of these. If the occurrence or non-occurrence of the event is able to be influenced, some form of policy action may be appropriate. All events are regarded as phenomena that may occur only once within a given time period. Like the Delphi method, cross-impact relies on intuitive judgment combined with systematic analysis.

The cross-impact process generally involves at least the following steps:

1. Defining the issue being addressed and the time period of interest.
2. Identifying the major events that are relevant and important to the issue at hand. These may be selected from a Delphi study, a review of the literature, or other means.

3. Making estimates of the likelihood of each event occurring during the time period of interest.
4. Constructing the cross-impact matrix by listing events as row and column headings of a table. The initial estimates of occurrence are shown in parentheses beside the events. Participants in the analysis are then asked to estimate how these estimates might change if each event in turn were to occur. These estimates are placed in the cells of the matrix (table).
5. Analyzing the interrelated set of events to try to understand where the occurrence of one event may strongly influence the likelihood of other events occurring.
6. Experimenting with alternative actions and policy options to arrive at an overall assessment of the interrelationships among events and determine how to best promote desired outcomes.

Computerized assistance appears to be necessary for analyzing and experimenting with large cross-impact matrices. Computerized runs can quickly spot inconsistent likelihood estimates, reduce the time and effort needed to perform experiments and quickly highlight significant interrelationships.

The technique of cross-impact analysis is often used with

other futures research methods. For example, a technique known as "probabilistic system dynamics" combines cross-impact with system dynamics (simulation) modeling developed by Jay Forrester at M.I.T. 11/ The technique not only describes the impact of a single event on other events but also describes the impact of events upon all elements of a simulation model. (Simulation models are described in a later section.) The impact typically takes several forms. These include: modifying the inherent structure of the simulation model; adding or deleting terms from the equations. The technique also permits the model to impact and change event likelihoods.

Another illustration is called "KSIM". 12/ This is a technique designed to simulate cross-impacts. It uses an interactive computer program which constructs a cross-impact matrix, performs the subsequent analysis, and permits policy-makers to add or delete events, redefine time and other limits, and modify cross-impact estimates.

Critiques of the Method

A number of benefits and limitations stem from the use of

11/ For a more complete discussion see: John Stover. Probabilistic System Dynamics. Glastonbury, Conn., The Futures Group. March 1975.

12/ For a more complete discussion see: Julius Kane. A Primer for a New Cross-Impact Language - KSIM. Technological Forecasting and Social Change, v. 4, 1972: 129-142.

the cross-impact analysis approach. Some of the major benefits are:

1. The approach rationale is very explicit and systematic. Interactions among events are clearly depicted. Counter-intuitive results are always retraceable from the inputs and unintended consequences can quickly be spotted.
2. Experimentation with the consequences of various actions and policy options are facilitated and various trade-offs can be tested. Results can provide useful inputs for the development of scenarios (future histories).
3. The likelihood estimates made by policymakers can easily be checked for logical consistency. Inconsistent estimates can be quickly revised and the reliability of the technique is thereby increased.

Cross-impact also has its limitations. Some of the major ones are:

1. Estimates of event likelihood are subjectively determined. This makes them vulnerable to uncertainty and arbitrariness.
2. The approach focuses on the interactions between only two events at a time. In reality, many events are interrelated in an overlapping and integrative manner.

3. While the consequences of event interactions are clearly identified, the mechanisms causing these consequences are not logically and systematically deduced.

Illustrations of the Method

Cross-impact analysis can be applied to problems and environments on all levels -- local, regional, national and international. Previously, it was stated that Step 4 of the cross-impact process involved making qualitative estimates with respect to the results of interaction between each event and other events. Figure II is an illustration of a cross-impact matrix which illustrates the correlations between events in a qualitative manner. The issue being addressed by this matrix is the probable effects of lower population and related factors on the civil work mission of the U.S. Army Corp of Engineers over the time period to 1980. ^{13/} Four events have been selected as the most important to the Corp's mission. These events are listed as row and column headings of the matrix. The judgments with respect to the qualitative impact of each event on

^{13/} Mitchell, A. and others. Handbook of Forecasting Techniques. Menlo Park, Calif., Center for the Study of Social Policy (Prepared for the Institute for Water Resources, U.S. Army Corp of Engineers, Ft. Belvoir, Va.).

every other event are placed into the matrix. The + sign signifies an enhancing impact; the - sign an inhibiting impact and the symbol 0 no appreciable impact. The matrix is interpreted as follows:

1. If a lower population growth rate were to occur, the likelihood of more leisure time would be enhanced; the likelihood of greater urbanization inhibited; and the likelihood of more household formation lowered.
2. If more leisure time was given to the population, the likelihood of a lower population growth rate would be raised; the likelihood of greater urbanization lowered; the likelihood of more household formation would not be affected.
3. If more urbanization were to occur, the likelihood of a lower population growth and more leisure would not be affected; the likelihood of more household formation raised.
4. If more household formation were to occur, the likelihood of a lower population growth rate and more leisure would not be affected; the likelihood of more urbanization would be increased.

Policymakers, of course, may take issue with the aforementioned relationships. Different individuals may perceive the relationships among the given events differently. In such cases, a dialog can be carried on and the subjective

If this event were to occur	The impact on this event would be			
	Lower Population	More Leisure	More Urbanization	More Households
Lower Population Growth Rate		+	-	-
More Leisure	+		-	0
More Urbanization	0	0		+
More Household Formation	0	0	+	

Figure II: Qualitative Cross-Impact Matrix for the U.S. Army Corp of Engineers

judgments aired. Possibly, a consensus of likely impacts can be obtained. These qualitative impacts can also serve as guideposts in making quantitative estimates of the likelihood of each event occurring.

The qualitative matrix in Figure II can be transformed into a quantitative cross-impact matrix by estimating the likelihood of each event occurring during the time period of interest (initial probabilities) and estimating the relationship among the events (conditional probabilities). Figure III represents such a transformation. The first row of this matrix is read as follows: A lower population growth rate is estimated to have a 0.80 likelihood of occurring by 1980; the likelihood of more leisure time occurring is estimated to rise from its initial likelihood of 0.90 to 0.99. Further, if this event does occur, the likelihood of greater urbanization is estimated to fall from 0.90 to 0.65 and the likelihood of more household formation is estimated to decrease from 0.60 to 0.40. The same line of reasoning is made when interpreting likelihoods for the remaining three events.

Experimentations with alternative policy options on the issue at hand can be performed. As a hypothetical example, suppose the Federal Government were to pursue a policy of subsidizing new home construction such as the \$2,000 tax

If this event were to occur	Having this likelihood of occurring by 1980 (Initial Probabilities)	Then the likelihood of this event also occurring would become (Conditional Probabilities)			
		Lower Population	More Leisure	More Urbanization	More Households
Lower Population Growth Rate	0.80		0.99	0.65	0.40
More Leisure	0.90	0.85		0.65	0.60
More Urbanization	0.70	0.80	0.90		0.70
More Household Formation	0.60	0.80	0.90	0.80	

Figure III: Quantitative Cross-Impact Matrix for U.S. Army Corp of Engineers

credit adopted by Congress in 1975. We might speculate then that the likelihood of more household formation by 1980 would rise from 0.60 to 1.0 (certainty). ^{14/} We might also estimate that the occurrence of this event would decrease the likelihood of lower population growth from 0.80 to 0.50; lower the likelihood of greater leisure time from 0.90 to 0.80; raise the likelihood of more urbanization from 0.70 to 0.90. A similar analysis can be made with respect to all events in the matrix. Thus, we can compare the impacts of individual events and then consider potential interactions between these events. For example, the U.S. Army Corp of Engineers could arrive at an overall assessment of future changes in the Corp missions by comparing the results from the impact matrix with the effects that a lower population growth rate would have on the Corp missions. Figure IV illustrates one possible outcome of such a comparison.

The conclusion implied from Figure IV is that a lower population growth rate, when examined in the light of other interacting events, increases the need for the Corp missions with particular emphasis on beach erosion control and water quality.

^{14/} Ibid., p. 138.

<u>Corp Missions</u>	<u>Results from Analyses of Events in Isolation</u>	<u>Results from Analyses with Interacting Events</u>
Flood Control	Less	More
Navigation	No Effect	More
Water Supply	Less	Much More
Beach Erosion Control	Less	Much, Much More
Hydropower	No Effect	No Effect
Recreation	Less	Much More
Water Quality	Less	Much, Much More

Figure IV: IMPACT ON CORP MISSIONS FROM OCCURRENCE OF
LOWER POPULATION GROWTH RATES

Applications of the Method to Public Agencies

The method of cross-impact analysis has been applied to a limited number of public policy issues. In an application similar to the one just discussed, the U.S. Army Corp of Engineers, Omaha District, studied the effects of exogenous (external) resources on the endogenous (internal) resources of the South Platte River Basin and the impacts that could arise from probable interactions. ^{15/} Some of the exogenous factors considered were: need for energy resources, food and fiber production, unemployment and state of the economy.

^{15/} Uncertainties Associated with Water and Related Land Resources Planning. Menlo Park, Calif., Center for the Study of Social Policy. April 1975 (Prepared for U.S. Army Corp of Engineers, Omaha District.)

Some of the endogenous factors investigated were: environmental factors, dispersal of employments, urban services, water supply and demand, residential density, social satisfaction, flexibility of individual choice, and costs involved. The planning horizon used was 50 years. A group polling technique was used to obtain the direction of impact. Each resource factor was weighted on an eleven point scale from -5 through 0 to +5. Computer analysis was performed to assess the relative importance of the exogenous influences. The final results were used to formulate scenarios for land and water resources planning in the South Platte River Basin.

In another application, the State of California Department of Transportation, Division of Transportation Planning has employed cross-impact analysis to help prepare a statewide multi-model transportation plan for the year 2000 and beyond. 16/ This study listed development (events) obtained from a Delphi study. Thirty-six developments were chosen and some that had high over-all impact on transportation planning included: free rapid transit, air pollution, resource allocation plan, oil and gas rationing, and encouragement

16/ Gray, Paul and Olaf Helmer. Summary Report, California Futures Study - Analysis of Impacts for Transportation Planning. Los Angeles, Calif., Center for Futures Research, Graduate School of Business Administration, Univ. of Southern California. November 30, 1974

of the use of mass transit. The study also estimated the degree of influence the California Transit System was likely to have on each development. In addition, a contingency index was calculated. This revealed the relative importance of contingencies over which the California Transit System has little control. A number of sensitivity tests 17/ using different scenario 18/ runs were made with the cross-impact matrix. Concentrating on those developments which had a strong impact and could be subject to some measure of influence by the California Transit System, the effectiveness of alternative policies was explored.

Cross-impact analysis and other futures research techniques were used in a series of workshops conducted by the Institute for the Future for the Bureau of Staff Development and Training of the Canadian Public Service Commission. These workshops, each attended by some twenty to twenty-five high level Canadian Government officials, addressed the economic,

17/ In sensitivity studies, the effects of changes in one development (resulting from unforeseen events or from deliberate policy action) affect other developments in the long term. Understanding the effects that such changes have makes it possible to identify the major contingencies with which plans have to cope and to compare the effectiveness of alternative policies and action programs.

18/ A scenario is a particular time sequence of event occurrences and changes in trend values. A large number of scenarios can be generated with the cross-impact approach.

social, physical, and overall environment of Canada for the next ten years. 19/ As a result of this demonstration, the Canadian government bought the relevant computer programs in an effort to apply the technique to the formulation of policies for the future in the Department of Industry, Trade and Commerce. In the workshops, the participants developed and evaluated a cross-impact matrix. They found some results to be counter intuitive. The causal linkages which produced the unexpected outcomes were traced and the subtle (but real) aspects of issues and their associated time horizons were significantly broadened.

19/ Enzer, Selwyn, and others. Futures Research as an Aid to Government Planning in Canada: Four Workshop Demonstrations. Middletown, Conn. August 1971
(A complete explanation of these workshops is given.).

Major Literature Describing the Method

1. Bloom, Mitchel F. Deterministic trend cross-impact forecasting. Technological forecasting and social change, v. 8, 1975: 35-74.
2. Dodge, B.H., and others. Handbook of forecasting techniques. Menlo Park, Calif., Center for the Study of Social Policy, Stanford Research Institute, Policy Research Report 10, SRI Project URU-3738. December 1975.
3. Enzer, Selwyn. Delphi and cross-impact techniques: an effective combination for systematic futures analysis. Working Paper WP-8. Middletown, Conn., Institute for the Future. June 1970.
4. Hencley, Stephen P. and James R. Yates. Futurism in education: methodologies. Berkeley, Calif., McCutcheon Publishing Corp. 1974 p. 115-126.
5. Helmer, Olaf. The use of expert opinion in international relations forecasting. Report M7. Los Angeles, Calif., Center for Futures Research. July 1973.

SCENARIOS

Originally a theatrical term, a scenario was a manuscript or plot outline which set forth a sequence of actions, as well as a description of characters and scenes. In the 1950s the word scenario was adopted by Herman Kahn and other policy analysts engaged in secret studies of the war game type at Rand. Kahn introduced the word to the public in what has become a classic to futurists, The Year 2000, published in 1967. ^{20/} As defined by Kahn, a scenario is a hypothetical sequence of events constructed for the purpose of focusing attention on causal processes and decision points. A scenario may be defined more completely as a consistent, well researched and detailed set of circumstances that is sufficiently plausible to allow the reader to understand the situations, conditions and strategies that prevail.

Scenarios of the future can be found in all forms, lengths, topics, and formats. One search of English-language business literature for the past five years turned up thirty-three articles discussing scenarios of the future concerning such diverse topics as (1) the future of the actuarial profession, (2) the role of management in dealing with Government intervention, (3) the seizure of Arab oil in the event of another oil embargo, (4) the handling of small bank assets and liabilities, and (5) the future problems of the pulp and paper industry. ^{21/}

If the scenarios are well structured, it allows the analyst or policy maker to probe consequences and to use the important human facilities of integration and imagination. There are essentially two classes of scenarios, comprehensive (macro) and detailed (micro). Comprehensive scenarios deal with major changes in society or some other set of macro systems. Detailed or micro scenarios deal with highly

^{20/} Kahn, Herman and Anthony Wiener. The Year 2000, New York, Macmillan [1967] 419 p.

^{21/} Zentner, Rene D. Scenarios in Forecasting. Chemical and Engineering News, v. 53, Oct. 1975: 22-34.

complex human situations in which there is a great premium on understanding the interpersonal interactions or the interactions of the human elements in the system. These two types of scenarios have different degrees of precision and clarity. ^{22/}

In terms of Governmental or public planning, scenarios may be divided into two categories -- scenarios of the environment and scenarios of the organization. ^{23/} In the first category, the scenario describes for the planner or the analyst, the future universe the analyst may encounter. The factors included may be economic, such as the rate of inflation and the costs of labor, raw materials, or capital. They may be political and describe the evolution of relevant laws and regulations or the national ownership of certain raw materials and their substitutes. These are macro level scenarios. Scenarios of the organization deal with organizational structure, mission, components, etc. These are micro level scenarios.

The scenario writer may have three different goals: (1) to explore an issue; (2) to teach something; or (3) to use the scenario as an analytical tool in policy analysis. ^{24/} Scenario writing is most useful when begun at the very outset of the policy analysis process. The first attempt at writing scenarios will "stretch the mind" of the analyst - if it doesn't do anything else - and force him to look at the future in concrete terms. Scenario writing calls attention to the large range of possibilities that must be considered in the analysis. At the same time, the analyst is forced to make his assumptions more explicit. In short, the first set of scenarios provides a structural framework for the analysis. ^{25/}

^{22/} This material was drawn from an article to be published in the Journal of Technological Forecasting and Social Change by Coates, Joseph F. The Role of Formal Models in Technology Assessment [1975] 61 p.

^{23/} Organization as used here may refer to the government agency, department, a level of government, or the entire governmental structure.

^{24/} Coates, op. cit.

^{25/} Carr, Barry A. Scenario Writing [1976] 9 p. This is an unpublished paper presented at a CRS training program on Futures Research and Forecasting. March 25, 1976.

Analysts traditionally complain about the lack of good data. Without data, models cannot be validated and our sophisticated mathematical techniques bog down. However, many analyses have suffered far more from a lack of theory and have ended up as fruitless exercises in number crunching. More than one analyst has contracted for a computer analysis with some firm or university, spent thousands of dollars and waited a year for the product, only to discover that the results don't address the issues under study. Well formed scenarios will help explore the issues and focus the more rigorous phase of the analysis. 26/

The marriage of the scenario to the formal data analysis is like adding a space dimension to the time dimension. Simple quantitative techniques, such as linear programming, time series projection and others, are notorious for their blind spots. The scenario writer can incorporate many nonquantitative factors into the analysis, and thereby provide a more complete picture. 27/

When the quantitative analysis is completed, the presentation of results to the public or other users can usually be done best in a scenario format. Some analysts stop short of completing this task. The task at this stage of the analysis is to identify and integrate the impacts (good and bad) on each element of the scenarios such that the user can aggregate the range of possible outcomes into an ordered preference set. 28/

The principal concern in designing scenarios, as with all other aspects of a policy analysis, should be relevance - to the users and to the issues. Each aspect of the scenario should be considered carefully and tested for relevance:

26/ Ibid.

27/ Ibid.

28/ Ibid.

- the type and amount of data presented,
- the type and number of actors (participants), events, and choices considered,
- the time frame of the analysis,
- the level of focus (macro or micro), and
- how many scenarios to use.

With respect to the size and level of detail of the scenario, the general rule is to avoid needless complexity and the confusion which results. ^{29/}

The time period of the scenario should correspond closely to the planning horizon of the user. This might be 100 years for a forest products firm, 50 years for an electric utility, 6 years for a Senator, and 2 years for a Representative. Some scenario writers seem preoccupied with magic numbers like the year 2000. This time period may not be relevant to the case at hand. Regardless of how far ahead the scenario looks, close attention must be paid to the present and all segments of the time path from present to future. ^{30/}

The number of scenarios used in the policy analysis is also important. With computers there is the capability of producing a nearly infinite number of scenarios, each slightly different from the other in one variable or the other. However, most users have great difficulty in keeping track of four or more scenarios at one time. Yet on the other hand, two scenarios would not do a decent job of displaying all the alternatives. Since the number of scenarios is necessarily limited, it is often useful to use one as a baseline scenario (what some would call a surprise free scenario) and the other two as outer boundaries (what some would call pure cases of some variation from the base). This kind

^{29/} Ibid.

^{30/} Ibid.

of spread will at least demonstrate how much, if any, difference exists in the futures. Later scenarios can home in on more relevant areas of the spread. ^{31/}

Usually it is unwise to label any scenario as the "most likely" or "most probable". In view of the large number of possible future outcomes, each and any specific scenario has a low probability of occurrence. Experience has shown that users are easily distracted by probability labels, such that all but the most probable scenario is ignored. For the same reason, all scenarios in a package of alternatives should be the same length. The natural inclination of a writer is to include the study assumptions and historical background in the baseline scenario. Since material of this type is common to all scenarios, it should be presented in a separate introductory section. ^{32/}

The process of obsolescence begins from the moment most scenarios are written. Sometimes it is difficult to get them published fast enough. Scenarios must be kept current to be useful. Updating can sometimes be accomplished by replacing key data tables, graphs and charts, provided you had the foresight to construct your scenario so as to permit easy replacement of these items. ^{33/}

The fundamental criterion in judging a scenario should be credibility. The scenarios must be linked to the real world, they must be plausible (believable) at each step and internally consistent. Scenarios based upon some miraculous discovery are sometimes entertaining, but are usually not considered plausible. Plausibility, however, should not be confused with predictive accuracy. Most scenarios are intended to discuss what could happen, not what will happen. The scenarios must also walk the thin line between intelligibility

^{31/} Ibid.

^{32/} Ibid.

^{33/} Ibid.

(being easy to understand) and utility (having sufficient detail to create an image that people can perceive as desirable or undesirable). ³⁴/

Critiques of the Method

Scenarios have been used extensively by some analysts and criticized by others. Some of the benefits are listed below:

- (1) Generally logical and plausible.
- (2) Most communicable form of futures research.
- (3) Sensitizes people to the dangers of a negative forecast.
- (4) Forces the analyst to deal with details and dynamics that he might otherwise avoid.
- (5) Illuminates the interaction of psychological, social, political, and military factors.
- (6) Stimulates the reader or user to conceive of other possibilities not necessarily included in the scenario, and also to think of contingencies.

The disadvantages or problems with scenarios are enumerated below:

- (1) Credibility of scenario is contingent upon forecaster.
- (2) As forecasts, they command little respect for accuracy, completeness, or validity.
- (3) Extremely dependent on the capability of the "scenario" writer.
- (4) Surprise-free futures may be surprise-free to one audience and shocking, illogical, and totally unacceptable to another -- reflecting differences in values, assumptions, and knowledge.
- (5) Scenario may be so divorced from reality as to be useless, as well as misleading, and therefore dangerous.

Illustrations of the Method

Scenarios have been used by almost every discipline. We have selected two illustrations. The first is excerpted from an article in Fortune Magazine and

³⁴/ Ibid.

depects one possible future for the single family home. ^{35/} The second is drawn from the study done for the California Department of Transportation by the Center for Futures Research, University of Southern California. It is a summary of the various sequential scenarios and their modifications. ^{36/}

^{35/} Breckenfeld, Gurney. Is the One-Family House Becoming a Fossil? Far From it. Fortune, v. 93, April 1976: 165.

^{36/} Gray, Paul and Olaf Kelmer. Summary Report, California Futures Study -- Analysis of Impacts for Transportation Planning.

The changing visage of the future

Ultimately, what is at stake in the struggle with climbing costs is the American standard of housing. To preserve it, or even keep it from deteriorating, government at all levels will have to start reducing the economic and political obstacles to building efficiently and inexpensively. So far there is no indication that the Administration, Congress, the press, or the public have enough grasp of the situation to take effective action. Under the circumstances, it is possible to envisage a future for the one-family house something like this:

1980 The acute shortage of land available for new homes gains belated recognition as a national crisis. Builders in some areas sell quarter-acre lots to one another for \$50,000 to \$60,000 in order to keep their operations going. The fact that it has become highly profitable to bribe local officials for permission to build is finally discovered by outraged state legislators, who begin headline-getting public investigations.

Responding at last to pressure from builders and planners, Congress passes a law requiring local governments to designate "development areas" and provide sewer and water facilities in order to get revenue-sharing grants. Financially strapped cities, dependent on federal money for their solvency, grudgingly comply.

Because of land costs and the huge increase in lumber prices during the late Seventies, the average new house has become considerably smaller despite its \$55,000 price tag. In many metropolitan suburbs an increasing share of construction consists of townhouses built on tiny plots in conformity with state anti-sprawl regulations. Factory-built homes have captured most of the market in small towns and rural regions, where such constraints as zoning and building codes remain minimal.

A crash program for solar heating is put in motion. The new federal standards for energy use require that all residential windows be double glazed to protect against heat loss. A shortage develops immediately, because so many window-glass plants are running far below their capacity for lack of fuel and power.

1990 The migration to small towns and the countryside continues, emptying the financially strained central cities of the Northeast of most white residents. Construction of one-family homes sets a new national mark by account-

ing for 91 percent of total starts, eclipsing the old record of 90 percent set in 1955. Though the average price of a new house has climbed to \$80,000, houses look much the same on the surface as they did fifteen years earlier. More precise engineering has enabled builders to reduce the amount of lumber and plywood in an average frame house by nearly 50 percent. An innovation dating from the Fifties, preassembled "plumbing trees" that substitute factory labor for more costly on-site labor, has finally become commonplace.

2000 The twenty-year burst of demand for housing recedes as the low birthrate of the past quarter-century yields a much diminished cohort of young adults in the population. Over the past decade, the number of persons in the key home-buying age group, twenty-five to thirty-four years, has declined by 16 percent. Housebuilding dips to the lowest level in decades. The cheap little subsidized houses built in the great moderate-income housing programs of the 1970's and 1980's become unsalable except at a great loss.

At the Department of Housing and Urban Conservation, as it is now called, this crisis is perceived with real alarm. Most of its employees—their number will certainly have doubled, at the very least, from the present 15,000—fear for their jobs. So the department, responding with unaccustomed vigor, undertakes a huge new program to subsidize housing demolition.

SUMMARY OF THE SEQUENTIAL SCENARIO AND MODIFICATIONS--1975 to 1995

CHANGE CATEGORY	MODIFICATIONS			
	1. BASIC SCENARIO (IX-B)	2. ENERGY CRITICAL (IX-C)	3. TECHNOLOGICAL PROCESS (IX-D)	4. HIGHLY EFFICIENT CARS (IX-E)
POPULATION	Reduced rate of growth. U.S. and California with birth rate stabilizing at replacement level. However, an increase in the rate of growth in the number of households continuing for several decades.	No Change	No Change	No Change
ECONOMY	Economy dominated by energy. Nations become increasingly economically interdependent. Inflation continues with frequent cycles and boom and bust occur at same time in different industries.	Energy intensifies in political and economic importance. Highest priorities placed on technological development. Prospects for war are great.	Vigorous growth in new areas, considerable contraction in others. Increase in world growth, but many boom & bust periods. New energy sources make petroleum less a nonproblem.	Some easing of energy problems. Reduction in personal vehicle cost erodes some mass transportation support.
RESOURCES	Increasing pressure to preserve land for agriculture and recreation. Material supplies (other than energy) adequate for ten years or so and short thereafter. Recovery of energy and materials from solid waste is substantial.	Increased pressure to produce food for export and to recycle solid wastes.	No Change	No Change
ENVIRONMENT	Social priority high. Favorable progress made, but demand for greater improvement still high. Congestion, air pollution, environmental issue. Increasing pressure for emission control as energy crisis eases.	Environmental considerations take a back seat to improvements in efficiency. Nonetheless, environmental effects are sized.	Major improvement from change in energy use patterns.	No Change
TECHNOLOGY	No major energy or transportation breakthroughs occur. Significant progress in communications is realized. Existing technology used with greater efficiency. Degree of support for technology related to severity of energy and transportation problems.	No Change	Major breakthrough in portable energy storage batteries.	Breakthrough in efficiency of internal combustion engine. Retrofit vehicles to increase fuel efficiency of existing vehicles to 50+ mpg.
SOCIAL CONDITIONS	Access to low cost transportation is regarded as a right. Social programs are integrated into a guaranteed annual income program. Leisure time increases gradually. Society more adult-oriented.	No Change	No Change	No Change
INSTITUTIONAL RELATIONS	Dominated by energy politics and the world food issue. Some possibility of oil allocation schemes or rationing for short time periods in the near term. Statutory regional agencies created.	Stepped up pressure for energy conservation and allocation schemes. Rationing virtually certain for long periods.	Improved prospects for self-sufficiency in energy and food throughout the world.	Concern shifts to long-term energy and transportation needs. Increased new taxes are likely.

Applications of the Scenario Method

The applications for this methodology have been drawn from studies conducted for the Departments of Housing and Urban Development, Commerce, Agriculture, the Environmental Protection Agency, and the California Department of Transportation.

Scenarios were used in a study for Housing and Urban Development, by Forecasting International, to assess the potential impacts of telecommunications technology on the central cities of the United States. ^{37/} The major elements of this study were:

- A survey of the state-of-the-art of the various telecommunications technologies (TCTs), and a forecast of how they will develop over the next 12 years
- A description of the methodology and assumptions used to make the impact assessment
- A projection of present trends to determine what cities would be like in the absence of any new developments in TCT
- A forecast of the future of cities assuming the previously forecasted developments in TCT
- A set of scenarios, or alternative ways in which the cities (and the country in general) might respond to the problems created by TCT
- A similar set of scenarios presenting alternative responses for the U.S. Department of Housing and Urban Development, in its TCT research program
- A set of conclusions and policy recommendations highlighting the salient points of the study

The plausibility of a restricted energy scenario was developed by the Stanford Research Institute for the U.S. Department of Commerce. ^{38/} This scenario explores a low energy growth use contingency with an emphasis on how to achieve and maintain economic stability in view of the present trends in our high energy-use growth society. Primary attention in the report is directed to the

^{37/} Nisenoff, Norman. Negative Consequences of Technology. Arlington, Va., Forecasting International, Ltd. [1972] 32 p. (Unpublished paper)

^{38/} Armstrong, Joe E. and Willis W. Harman. Plausibility of a Restricted Energy Use Scenario. Menlo Park, Calif., Center for the Study of Social Policy, Stanford Research Institute. 28 p plus appendices.

period 1985-1990. The objectives of the study of such a scenario were: (1) to establish the plausibility that for a variety of reasons the United States may choose or find itself forced to accept at some point in the future a low or no growth situation in energy usage; (2) to explore the reliability of using past trends and relationships for the economic, social, and technical projections up to and beyond 1990; and to assess the feasibility of key characteristics of a comprehensive energy conservation plan.

In a different study, the Stanford Research Institute explored a range of alternatives covering the next twenty-five years for the Environmental Protection Agency. ^{39/} The objective of the study was to provide EPA with a set of alternative futures forecasts for use in the planning of pesticide policy. Ten alternative future scenarios are the heart of the report. They provide, with individual variations, three general themes for the next twenty-five years.

The first theme, industrial success, centers on the continual success of the industrial age paradigm. The results, although somewhat imperfect, are achieved through the medium of the political, economic, and social forms now existing in the developed countries. This is the optimistic scenario.

The theme of the second scenario is pessimism. It conveys industrial failure and the relative failure of the above institutions. While the major institutions and the industrial age values they incorporate remain dominant, nations of the world become poorer, less equitable societies that provide less individual liberty and opportunity for self-fulfillment, and that exist in a less stable and decreasingly viable relationship with the natural environment.

The third theme is one of industrial transformation where the emphasis is not on economic growth, but on the growth of the individual. To some extent

^{39/} Elgin, Duane S., David C. MacMichael, and Peter Schwartz. *Alternative Futures for Environmental Policy Planning: 1975-2000*. Menlo Park, Calif., Center for the Study of Social Policy, Stanford Research Institute [1975] 286 p.

It is built around the concept of thinking small. It emphasizes Emerson's ideal of "plain living and high thinking".

The cross-impact model used by the Center for Futures Research at the University of Southern California for the California Department of Transportation (CALTRANS) (described earlier on page) was used to develop scenarios. ^{40/} The scenarios were developed around the three most important contingencies (economic depression, air pollution, and oil and gas rationing) over which CALTRANS has little control.

Additional scenarios starting with the present and working to the future were also prepared. A general scenario was prepared describing the alternatives for the first decade. One of these alternatives was selected as the starting point for the next decade and so on. Radical departures such as scenarios in which technological breakthroughs occur were written separately. The scenarios written were actually a set of building blocks which could be integrated in various ways to obtain many alternative futures.

In 1975, the Office of Planning and Evaluation of the USDA published a policy study titled, "Alternative Futures for U.S. Agriculture." ^{41/} This study looked at three different agricultural systems being supported by various advocates:

- A maximum efficiency, free enterprise industry characterized by fewer and larger farms, as supported by Secretary Butz.
- A supply control future characterized by Government programs to stabilize production and prices, as supported by the Congress.
- A small farm agriculture which would permit the maximum number of farms, as supported by many agrarian fundamentalists.

The scenarios began in 1972 - the latest year for which data was available when the study began in 1973 - and ended in the year 2010 - the year in which many

^{40/} Gray, Paul and Olaf Kelmer. Summary Report, California Futures Study -- Analysis of Impacts for Transportation Planning.

^{41/} U.S. Congress. Senate. Committee on Agriculture and Forestry. Alternative Futures for U.S. Agriculture, Part I. Washington, U.S. Govt. Print. Off., 1975. (94th Congress, 1st session). 52 p.

of the policy changes being considered would have played themselves out into some sort of equilibrium. Each scenario contained a description of the policy instruments (programs) required to achieve the desired future. The impacts, costs and consequences upon farmers, farm laborers, rural towns, domestic consumers, foreign consumers, Government expenditures, natural resources and environmental quality were discussed.

Selected Readings

- deLeon, Peter. Scenario designs: an overview. Santa Monica, Calif., Rand Corp. [1973] 19 p. (Prepared for Defense Advanced Research Projects Agency).
- Elgin, Duane S., David C. MacMichael and Peter Schwartz. Alternative futures for environmental policy planning: 1975-2000. Stanford Research Institute, Center for the Study of Social Policy [1975] 286 p. (Prepared for Environmental Protection Agency, Washington, D.C.).
- Kahn, Herman and others. The next 200 years; a scenario for America and the world. (Draft) Croton-on-Hudson, N.Y., Hudson Institute [1976] 275 p. (To be published by William Morrow and Co., Inc., May 1976).
- Van Horn, Mike. Creating images for a positive future. Futures conditional, v. 3, no. 2, a publication of the Northwest Regional Foundation, Spokane, Wash., item #9.
- Zentner, Rene D. Scenarios in forecasting. Chemical and engineering news, Oct. 6, 1975: 22-35.

TREND EXTRAPOLATION

A trend line can be regarded as history. If we project a trend line into the future, the projection process is called "trend extrapolation". Characteristic of this approach, is the listing of the values of some factor of interest (called a variable) against specific intervals of time -- in the past and in the future. For example, the funds provided for aid to dependent children (in dollars) can be plotted monthly over a period of years. The time intervals utilized may vary from days to decades depending on the needs of the analyst and the policy maker. The values of the variable may increase or decrease with time. These changes constitute the trend.

The future or extrapolated values are the forecasted trend. The forecasted trend should extend into the future no more than the same number of time intervals for which there is past data. Thus, if the data base contained data for the past fifteen years, extrapolating a trend line thirty years into the future probably would be highly questionable. The end product of a trend extrapolation can take the form of graphs, bar charts and tables (which can easily be converted into the other forms, narratives, scenarios, etc.)

While many techniques are and have been used to extrapolate trends, two fundamental groupings can be distinguished:

1. Judgmental, intuitive, visual techniques. These techniques involve extending a trend by individual estimates or obtaining a group consensus. Because they rely on nothing more than visual inspection, they may be subjective.
2. Sophisticated mathematical techniques. Because of the possible subjectivity of the above techniques, many individuals prefer to use more sophisticated mathematical techniques. The determination or selection of a mathematical equation to fit a trend (called curve-fitting) requires a knowledge of statistics. There are a number of standard curves (equations) that may be fitted to a trend:
 - a. If the factor of interest increases or decreases in the same proportion during each time interval, we obtain a straight line trend.

- b. If the factor of interest increases in geometric fashion (1,2,4, 8,...) during each time interval we obtain an exponential trend.
- c. If the factor of interest initially increases slowly, then more rapidly with eventual flattening out, we obtain a "s-shaped" trend.

Typically, experimentation is made with a number of possible curves when extrapolating a trend -- especially when historical data is incomplete or sporadic. It may be necessary to interpolate between two values to obtain a needed value. This occurs when the values are available only for irregular time periods. Trends formulated with interpolated values have a greater range of uncertainty.

The computer has encouraged the use of diverse and sophisticated trend-fitting methods. In turn, this has enabled planners and forecasters to project trends for many different variables at relatively low cost.

It is not uncommon to find two or more trends being placed on a chart for comparison purposes. For example, in a study conducted by the Institute for the Future, forecasts were made about the likelihood of Government sponsored social welfare programs. ^{42/} Curves on the past performance in rate of adoption of such programs by twenty-four countries throughout the world were prepared. The following generalizations were made from the curves:

1. The rate of spread of social welfare programs among the countries studied has not varied much over the last 100 years.
2. The United States has never been an innovator in such programs.
3. Certain programs are now in existence in other countries in the group which the United States might expect to have within the next 10 to 20 years.

^{42/} Gordon, Theodore J. The Current Methods of Futures Research. In The Futurists. Toffler, Alvin, ed. New York, Random House 1972, p. 168. (Gordon's comments are based on "A Study of Potential Changes in Employee Benefits", Reports R1, R2, R3. Institute for the Future, April 1969).

Critiques of the Method

There are a number of positive aspects to forecasting the future with trend extrapolations. The major ones appear to be:

1. The progressive history of any selected variable is clearly displayed for subsequent subjective interpretation. Planners and policymakers can see and probably accept the general shape, direction, and slope of a trend without needing to understanding its underlying assumptions.
2. The approach appears to have wide applicability to the significant variables in the physical, biological, behavioral and social sciences.
3. A reasonably accurate trend can be formulated in relatively short time because visual judgment can be applied in many cases and computer programs for the standard curves are available.

Some of the limitations mentioned in connection with trend extrapolation include:

1. The approach implicitly assumes that the factors that shaped the past will continue to hold true in the future.
2. An adequate data base having values for the required time intervals must be maintained in order to establish reliable trends. This can be time consuming and expensive and in many cases it simply does not exist.
3. Discontinuities are not explicitly handled in trend extrapolation, yet discontinuous events such as fads, assassination attempts, ghetto, college and other kinds of riots, etc. can influence trends.
4. Data for different time intervals may not be parallel or compatible even though they may be presented as such. Definitions and standards of data acquisition and recording vary greatly from time to time.

Illustration of the Method

Trend extrapolations can be presented as either graphs or tables. Further, graphs can take the form of line (or curve) charts and bar charts. The graph in Figure IV shows the trend of population growth in the United States from the beginning of the 19th century to almost the middle of the 21st century.^{43/} It reveals a constantly increasing (exponential) amount of growth. This graph

^{43/} Lapp, Ralph E. The Logarithmic Century. Englewood Cliffs, N.J., Prentice Hall, Inc. 1973, p. 5.

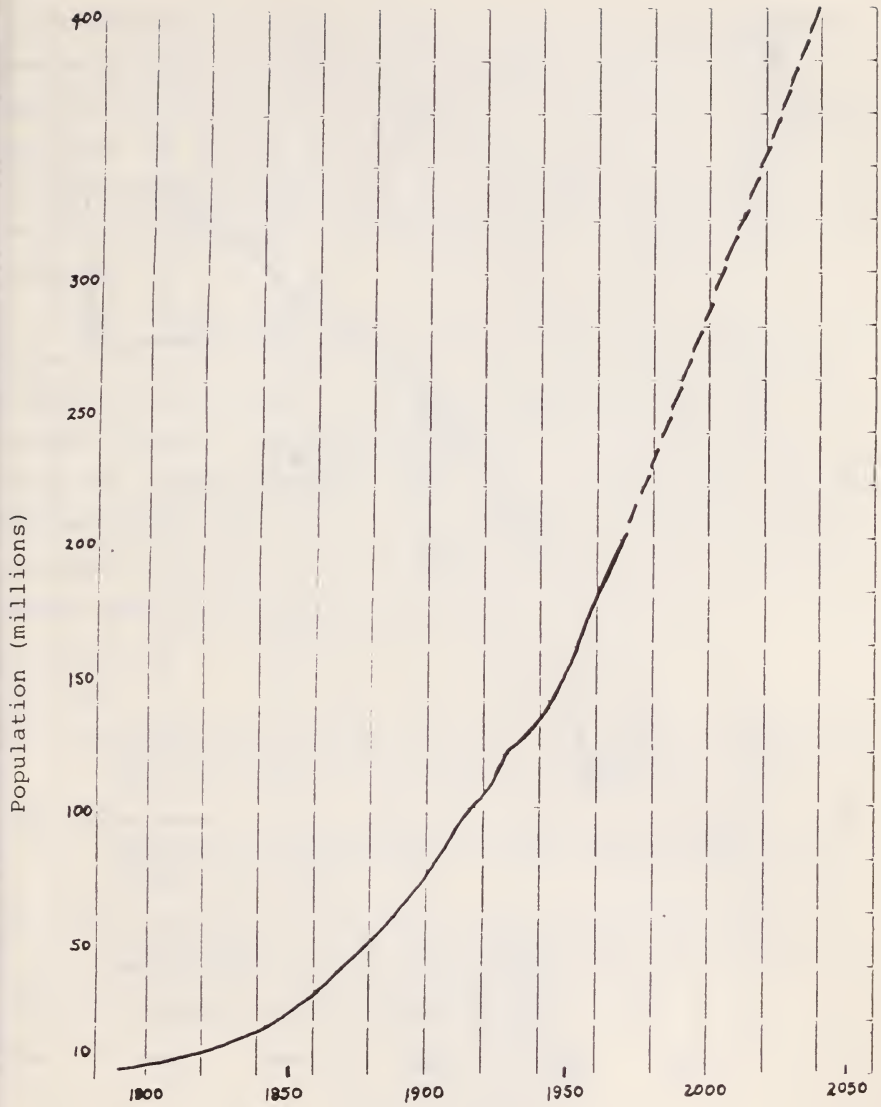


Figure IV

POPULATION GROWTH OF THE UNITED STATES

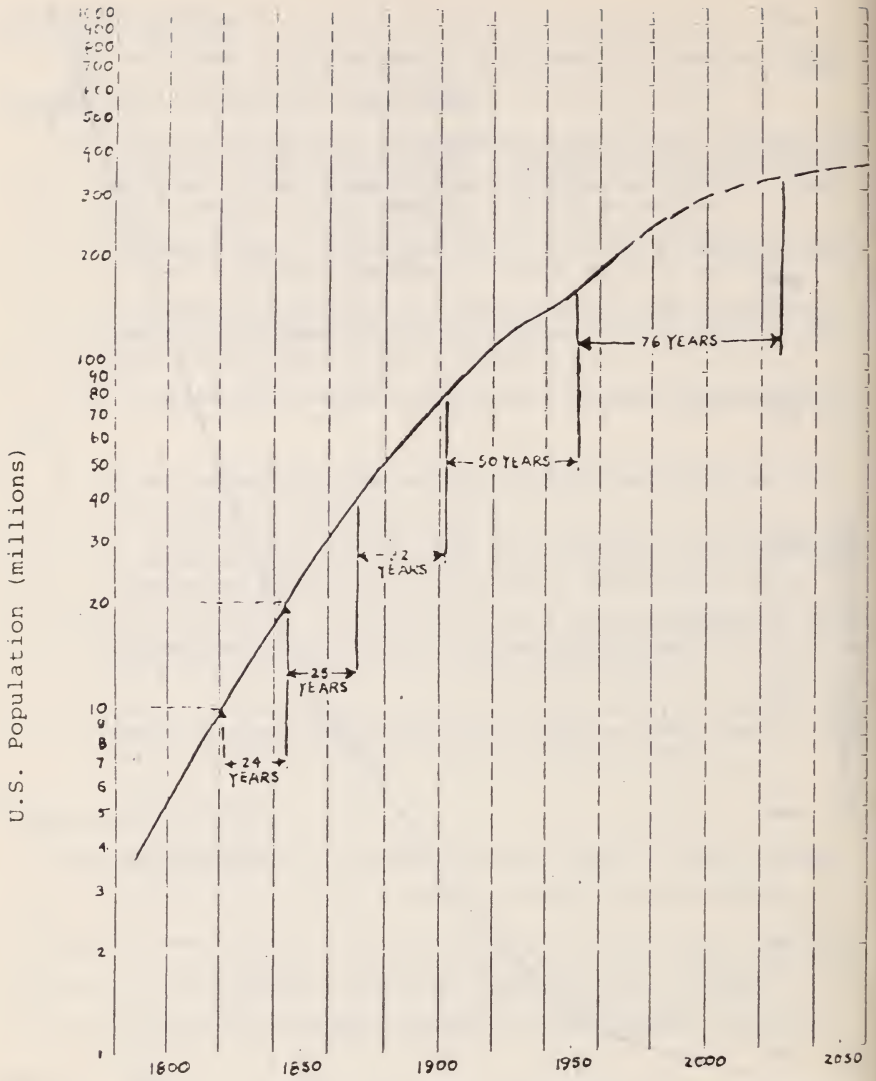


Figure V

POPULATION GROWTH OF THE UNITED STATES

is useful for showing the amount of change per unit of time. Graphs can also be prepared on specially drawn graph paper called semi-logarithmic graph paper. The graph comprising Figure V shows the same data as Figure IV plotted on semi-logarithmic graph paper. ^{44/} Here the vertical axis of the graph is given as a logarithmic scale rather than an equal arithmetic scale. ^{45/} Trends plotted on semi-logarithmic paper are very useful for determining the rate (rather than the amount) of change per unit of time.

Figure VI is an illustration of a trend in tabular format. It shows historical values (1950 to 1974) and projected values (1975 to 2000) for the U.S. population broken down by age groupings. ^{46/} The values are from the series I projections of the Census Bureau. ^{47/} Figure VII uses a bar chart to display a trend and show part of the data contained in Figure VI. Specifically it reveals historical values up to 1975 and projected values up to the year 2000 for all three series of population projections for the under five years of age group. ^{48/} A bar chart is frequently useful to show multiple possible projections.

^{44/} Ibid. p. 7.

^{45/} A logarithmic scale is simply a ratio scale, as will be seen by noting that the left-hand scale in Figure 2 displays the same vertical distance from 1 to 2 as from 2 to 4 and from 4 to 8, etc.

^{46/} U.S. Department of Commerce, Bureau of the Census. Population Estimates and Projections of the Population of the United States 1975-2050. Series P-25, No. 601. Washington, D.C. U.S. Government Printing Office. October 1975. p. 12.

^{47/} Series I projection is one of the three main projections series with each series assuming different levels of future fertility, mortality and net immigration.

^{48/} U.S. Department of Commerce, Bureau of the Census, op. cit., p. 12.

(Numbers given are in millions)

Subject	Total, all ages	Under 5 years	5 to 13 years	14 to 17 years	18 to 24 years	25 to 34 years	35 to 44 years	45 to 54 years	55 to 64 years	65 years and over
ESTIMATES										
Population										
1950.....	152,271	16,410	22,423	8,444	16,073	24,036	21,637	17,453	13,396	12,197
1955.....	165,931	18,566	27,923	9,247	14,968	24,283	22,912	18,985	14,822	14,325
1960.....	180,871	20,341	32,965	11,219	16,128	22,919	24,221	20,578	15,625	16,675
1965.....	194,303	19,824	35,754	14,153	20,293	22,465	24,447	21,839	17,077	18,451
1970.....	204,879	17,156	36,636	15,910	24,683	25,293	23,142	23,310	18,964	20,085
1975.....	211,909	16,304	34,082	16,878	26,908	29,770	22,823	23,821	19,307	21,415
PROJECTIONS										
Series I										
Population										
1975.....	213,641	16,101	33,441	16,923	27,597	30,906	22,816	23,758	19,769	22,330
1980.....	223,705	20,001	30,411	15,753	29,441	36,157	25,702	22,640	21,047	24,523
1985.....	241,274	24,042	33,330	14,388	27,834	39,846	31,332	22,378	21,465	26,659
1990.....	257,663	25,417	11,242	13,534	25,162	41,062	36,545	25,213	20,479	28,933
1995.....	272,683	24,727	45,728	17,912	24,741	38,148	40,144	30,681	20,296	30,307
2000.....	287,007	24,654	45,923	20,575	30,578	34,641	41,315	35,742	22,937	30,600

Figure VI: ESTIMATES AND PROJECTIONS OF THE POPULATION BY AGE: 1950-2000

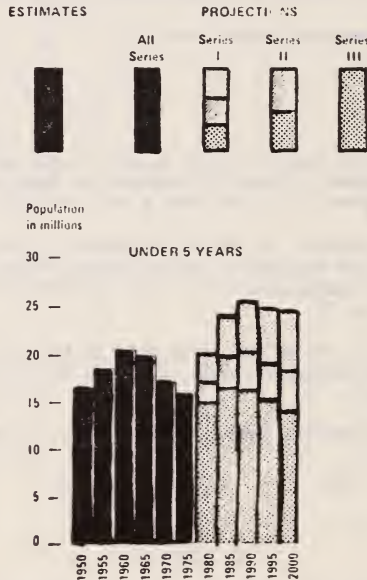


Figure VII: POPULATION ESTIMATES AND PROJECTIONS FOR UNDER FIVE YEARS OF AGE

Applications of the Method to Public Agencies

Practically all of the executive agencies of the U.S. Federal Government publish trends -- most often in tabular form. These trends serve many types of interested outside parties (e.g. state and local governments and private businesses) and internal planners and policy makers are provided with rationally derived data for formulating policy decisions, legislative proposals, and program options.

The Social and Economic Statistics Administration of the U.S. Department of Commerce has developed tabular projections of personal income, employment and population for 1980 and 1990 for 426 geographic areas which cover the nation and for another 226 areas which represent different groupings of the 426.^{49/} Historical data for selected years back to 1950 are also included. These projections are keyed to the U.S. Census Bureau's series E national projections.^{50/} These projections are considered to have three major types of uses:^{51/}

1. The projections serve to facilitate the assessment of future public and private demands for various types of goods and services. These include, for example, demands for consumer goods and services, for the physical capital related to the energy resources development and pollution abatement, as well as need for teachers, policemen, doctors, and workers in other private and public capacities.
2. The projections provide a preview of the probable future of an area's economy through which current or emerging problems such as inadequate per capita incomes, the loss of a basic industry, or the deterioration of the environment can be foreseen and corrective policies adopted.

^{49/} U.S. Department of Commerce; Social and Economic Statistics Administration; Bureau of Economic Analysis. Area Economic Projections 1990: States and Regions, BEA Economic Areas, SMSA's, Non-SMSA Portions of BEA Economic Areas. Washington, D.C. U.S. Government Printing Office.

^{50/} The letter projection of the Census Bureau has been superseded by three numbered projections series.

^{51/} U.S. Department of Commerce, Social and Economic Statistics Administration, Op. Cit., p. 1.

3. The projections form a baseline framework useful for program evaluation purposes. If a remedial or development program is considered for an area, the projected economic activity in that area can be modified to reflect the expected effects of the program. Comparisons of the modified projections with the baseline projections provides a quantitative measure of the effects of the program, positive or negative, in each affected region.

The National Space and Aeronautics Administration developed a large number of graphical trends for their "Outlook for Space" study which examined the future of civilian space activities during the period 1980 to the year 2000.^{52/} The study developed trends for three types of technological capabilities: the management of information, energy, and matter, with respect to four functional processes - acquiring, processing, transferring and storing.

The purposes of the study were stated as follows: ^{53/}

1. To relate the goals and objectives of possible civilian space activities in the period 1980 to the year 2000 to national goals and objectives.
2. To develop an unconstrained listing of desirable and practical U.S. civilian space activities for the period 1980 to the year 2000 and beyond.
3. To identify a grouping of activities that is consistent with specific sets of goals, objectives and themes.
4. To define research and development tasks required to meet potential commercial and operational uses of space in the future.
5. To identify social and economic challenges facing the Nation during the remainder of this century.

The U.S. Department of Health, Education and Welfare has formulated trend projections and profiles of current and past supply of health manpower and projections of manpower supply to 1990.^{54/} The health occupations covered included

^{52/} National Aeronautics and Space Administration. Outlook for Space: A Forecast of Space Technology 1980-2000. Reference Volume, Final Draft. Washington, D.C. July 15, 1975.

^{53/} Ibid., p. 1-1.

^{54/} U.S. Department of Health, Education and Welfare. Public Health Service, Health Resources Administration, Bureau of Health Resources Development. The Supply of Health Manpower. Health Manpower References. DHEW publication No. (HRA) 75-38. Wash., D.C. Govt. Print. Off. December 1974.

physicians, dentists, optometrists, pharmacists, podiatrists, veterinarians, registered nurses, and allied occupations.

Major Literature Describing the Method

1. Hencley, Stephen P. and James R. Yates. Futurism in education: methodologies. Berkeley, Calif., McCutcheon Publishing Corp. 1974. p. 251-282.
2. Lanford, H.W. Technological forecasting methodologies: synthesis. New York, American Management Association, Inc. 1972. p. 32-58.
3. McHale, John. World facts and trends. Second edition. New York, Collier Books. 1972. 96 p.
4. Michell, A., and others. Handbook of forecasting techniques. Prepared for Institute for Water Resources, U.S. Army Corp of Engineers, Fort Belvoir, Va. Prepared by Center for the Study of Social Policy, Stanford Research Institute, Menlo Park, Calif. Policy Research Report 10. SRI Project URU-3738. December 1975.

TREND IMPACT ANALYSIS

Summary Description of the Method

As noted in the previous section, a trend is any information which shows historic developments over time. Trends can be presented in tables, charts or graphs, and provide a useful method of historical analysis. If an historic trend line can be drawn into the future or extrapolated, the trend can be used as a forecast and may aid in the analysis of the future.

To extrapolate a trend, it is necessary to assume that the social, economic and other forces which controlled the historic development of the trend will continue to control it in the future. This assumption is certain to be wrong eventually -- things change. Two recent examples of instances where trend analysis would have been misleading are 1) the U.S. fertility rate, and 2) the price of imported oil, shown in Figure VIII. In each case, unexpected things happened to change the historic path of these trends.

Trend impact analysis (TIA) was developed to include in the analysis of trends the effect of possible unexpected events that may change the historic path of a trend. After the selection of a trend, trend impact analysis can be initiated by the following steps:

1. Identifying possible events which might cause some change in the path of the trend.
2. Estimating the chances that each event will happen.
3. Estimating the impact of each event on the trend.

The impacts of each event must be described in detail, including the amount, timing and shape of the impact. (See sample impact shapes, Fig. IX)

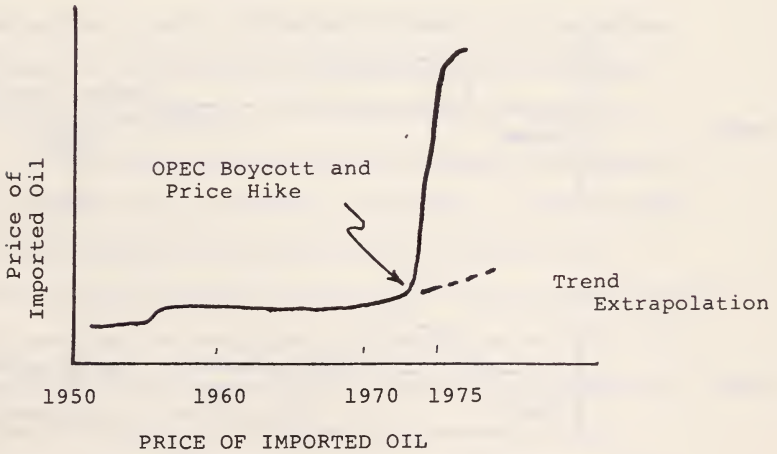
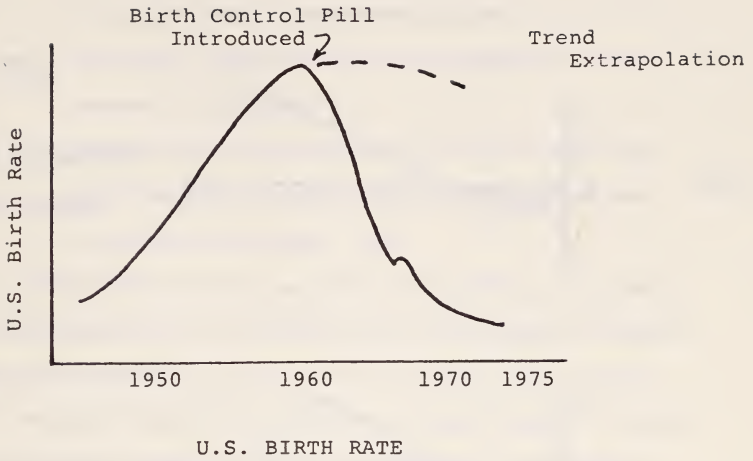


Figure VIII Examples of Limits Trend Extrapolation

Sample Event Impact Shapes

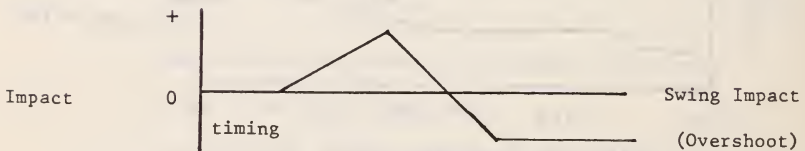
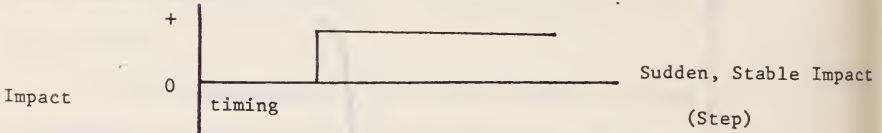
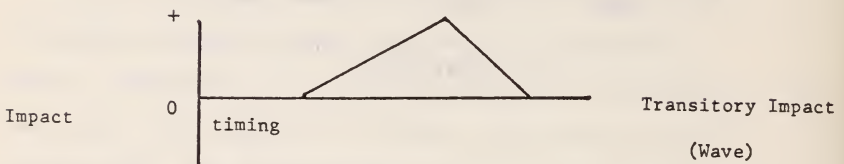
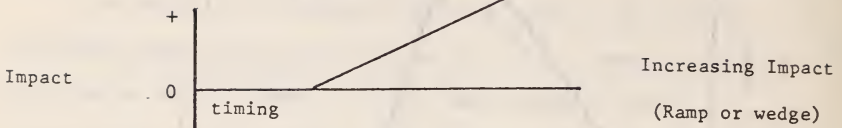
SHAPE

Figure IX

4. Calculating the total impact of all events by letting each event "happen" each year according to its chances of happening.
5. Changing the extrapolated trend in each year by the total impacts calculated above to determine the new direction of the trend. 55/

TIA has several other useful applications in addition to producing an event-impacted trend. Individual events can be made to "happen", showing the sensitivity of the trend to the event. This can aid policy analysis by identifying the most and least important events. It also focuses attention on those events where policy options would be most effective. These policy options can be tested by allowing the policies to change the effect of events. For example, policies might affect events before they happen, by changing their chances of happening or after they happen, or changing their impacts. Comparing TIA results with and without policies, the effectiveness of the policies can be evaluated.

Critiques of the Method

Trend impact analysis provides a framework for analysis that is useful both as a process and a product -- a process that elucidates judgments, opinions, and expectations about the future of events, trends, and policies and their inter-relationships, while producing an event-impacted projection and measures of its uncertainty. This framework and its results rest on judgmental estimates, and as such are limited to the accuracy of these estimates. In providing a detailed series of steps quantifying judgmental estimates and opinions, TIA highlights implicit

55/ These steps are presented in more detail in the Methodological Annex at the end of this chapter.

assumptions about the future while serving to articulate the forecasting process and discussions of the future. TIA also can be used to aid in the formation and evaluation of policies.

Other major attributes include:

1. A systematic method of including in trend analysis outside events which might change the historic path of a trend.
2. A means to identify the most important events and their consequences.
3. A method of assessing the sensitivity of a trend to outside events.
4. A framework for policy analysis.

Major limitations of trend impact analysis include:

1. Its reliance on other methods such as literature searches, brain-storming, and Delphi to identify key events and to determine their interactions.
(TIA assumes that there are no other interactions among the events, their impacts and the trend.)
2. Its heavy reliance on judgmental estimates and opinions.
3. Its inability to consider the relationship between the impact of an event and the time of its occurrence.
(i.e., the impact of an event in 1985 may be different than its impact today.)
4. Its complexity and cumbersomeness in all but the most limited applications. The detailed description of the impact and timing each event requires at least six separate estimates. A typical TIA includes, at a minimum, six events, and thus, thirty-six estimates.

Illustrations of the Method

Trend impact analysis can be applied to all kinds of trends ranging from social trends, with events and their impacts very much a matter of opinion, to technical trends with most event impacts calculated. In the two illustrations that follow, a measure of this range is demonstrated.

1. The events shown in Figure X were selected and analyzed as part of a study of the future of the pharmaceuticals industry. ^{56/} The trend impacted by the events was the average cost of a prescription (in constant dollars).

An extrapolation was developed using a mathematical curve-fitting program. This extrapolation and the event-impacted projection with its associated percentile ranges are shown in Figure XI. While the trend extrapolation shows continued growth in the price of the average cost of a prescription, the TIA projection shows the cost stabilizing in ten years and declining thereafter.

2. In a less quantitative application, TIA was coupled with scenarios to produce alternative forecasts for the future of business productivity. Four different scenarios were constructed around the following themes:

- A. Limited Growth
- B. Expansive Growth
- C. Individual Affluence
- D. Muddling Through
- E. Medium Growth

^{56/} Prepared by The Futures Group, Glastonbury, Conn., as part of PROSPECTS, a data service developed with R.A. Gosselin and Co., IMS America.

The same events were evaluated for each of the scenario themes to obtain five different input estimates. The five TIA trends for each scenario are shown in Figure XII.

These event-impacted projections show that the muddling through scenario produces about the same result as a scenario of limited growth. Similarly, the expansive growth and individual affluence scenarios produce about the same result. This suggests that if the United States is to maintain its traditional progress in business productivity, it must achieve more of the elements of the expansive and affluence scenarios than of the others.

Applications of the Method to Public Agencies

Trend impact analysis is a second generation forecasting tool and as such has been used by only a limited number of government agencies in addressing public policy issues.

The Department of Agriculture used TIA in a workshop environment to study the future of agricultural indicators and the Federal Aviation Agency used TIA to quantify the assumptions of five different scenarios outlined under illustrations above.

The Department of Agriculture focused on indicators of agricultural supply, e.g., cropland availability, and demand, gross national product, over the next fifty years. A panel of personnel from the Department was assembled to provide the input estimates. This panel selected the indicators and events used in the study.

In a Delphi-like process, the panel evaluated the impact and probability of each event in the course of a two-day meeting. These estimates were then used in TIA to produce event-impacted projections and associated percentile ranges.

These projections were then fed back to the panel for use in scenario preparation.

The Federal Aviation Administration used TIA in studying five alternative futures to determine the possible consequences for U.S. travel needs and aviation industry. This study focused on social trends which describe the future passenger use of U.S. airlines. These trends included the length of the work week, disposable personal income, leisure expenditures, among others. Adjusting the impacts and probabilities of the events to reflect its different scenario assumptions, the FAA used TIA to transform event impact estimates into projections for the trends. This provided a means for testing the logic and consistency of the scenarios as well as the assumptions and approach. Based on this work, the FAA is developing monitoring capabilities to track key events and trends and to update the scenarios.

Major Literature Describing the Method

- Becker, Harold S. and Herbert Gerjuoy. Management of risk using trend impact analysis: an application of computer techniques for corporate planning and decision-making. Presented to the American Chemical Society, 166th Annual Meeting, Chicago, Ill, Aug. 29, 1973 by The Futures Group, Glastonbury, Conn.
- Rosove, Perry E. A trend impact matrix for societal impact assessment. [Los Angeles] Center for Futures Research, Graduate School of Business Administration, University of Southern California, 1973. 24 p. ([Southern California. University. Los Angeles. Center for Futures Research]) M5).

COMPUTER SIMULATION MODELING

Summary Description of the Method

The method of computer simulation modeling is based on two concepts: a system and a mathematical model. A system can be viewed as parts - of any kind - operating in harmony to attain one or more purposes. Examples of systems are plentiful and include: any machine, a production line in a factory, the digestive system of a human being, a molecule as well as the atoms comprising it, the earth's solar system, and the U.S. economy. A mathematical model can be regarded as a detailed mathematical description of the relationships among the most important factors (variables) within a system. Although a person may have detailed knowledge about the parts of a system, the number of interactions is usually too large for the human mind to handle. By utilizing various approximation procedures, reducing the number of factors and employing reasoned protective judgments, an "explicit" mathematical model can be formulated from a person's "implicit" mental model of a system.

A mathematical model is constructed by formulating equations which describe system components and their interrelationships. A special class of mathematical models is referred to as simulation models. The term simulation refers to the process

of reproducing the dynamic behavior of a system as it operates over time. The basic premise of simulation modeling is that the simulation model can serve as a surrogate to some system - real or artificial if the variables comprising the model are programmed to run on a computer, time can be made to run faster than actual time for system operations or events. Thus, the results obtained with a computer simulation model can be used to forecast some future state of the system. The method facilitates the generation of a large amount of data which otherwise might take months or years to accumulate. Computer simulation modeling also has the capability to estimate the effects of external forces on the system. These forces may be favorable policies under the control of policymakers or represent unfavorable and uncontrollable circumstances.

Many approaches have been employed to construct different types of computer simulation models. One approach is known as econometric modeling. The basis for the development of an econometric model is assumptions about how economic units behave when they produce, exchange, and consume economic goods. Economic units may be households, firms, governments, etc. "Macro-economic models are econometric models that concentrate on various groups of economic units using aggregate measures such as national income, total employment, and the price level. Macro-economic models examine how the

the interactions of various sectors of the economy with different behavior patterns determine the aggregate magnitudes of the total economy." 57/

Another simulation approach is input-output modeling.

"The basis of an input-output model is a table showing the relationships in dollar terms between the inputs and outputs of each sector of the economy. Also depicted are the ultimate demand inventor accumulation, exports, government and private purchases and capital formation. Also represented, are inputs in the form of payments from such sources into the economy." 58/ Such a technique can be used to determine the types of investments which would be most effective in stimulating growth and for studying the level or nature of the aggregate demand that would be required to achieve full employment.

Systems dynamics, another approach to simulation modeling, is based on principles borrowed from engineering. 59/ It

57/ Kogiku, K.C. An Introduction to Macroeconomic Models. New York, McGraw Hill. [1968] p. 1.

58/ U.S. Environmental Protection Agency. A Guide to Models in Governmental Planning and Operations. (Prepared for the Office of Research and Development.) Washington, D.C., U.S. Environmental Protection Agency. Aug. 1974. p. 23.

59/ Goodman, Michael R. Study Notes in System Dynamics. Cambridge, Mass., Wright-Allen Press, Inc. [1974] .

represents system changes through time by linking various levels (accumulations within a system) and rates (flows of some items from one part of a system to another part). Rates of flow are called decision rules because they control the activities of a system. Feedback loops are used extensively. These loops may cause the system to seek some goal or equilibrium (like a thermostat) or contribute to persistent, and perhaps unwanted, system growth (like a chain reaction of an atomic explosion). Level and rate equations quantify system entities, activities and interrelationships.

Critiques of the Method

There are a number of benefits which can flow from the construction and use of computer simulation models. These benefits have been grouped into six categories. 60/

1. They impose a logical discipline which forces precise statements of problems and objectives and requires that the system being described be explicitly divided into its major components and major interrelationships among these components. Thus, it is possible to

60/ U.S. Congress. House. Committee on Merchant Marine and Fisheries. Subcommittee on Fisheries and Wildlife Conservation and the Environment. Computer Simulation Methods to Aid National Growth Policy. Washington, D.C. U.S. Gov't. Print. Off., 1975. p. 35. At head of title: 94th Congress, 1st Session. Serial No. 94-B.

identify components and relationships that may have been previously missed or ignored even before a simulation is run.

2. While simulations do not give answers directly, they can provide novel and critical insights into system behavior. Sometimes these insights may be counter to what was expected. Further, these insights can provide the bases for experimenting more deeply in certain directions and suggest new research possibilities.

3. Simulations provide a framework within which experiments can be conducted. The sensitivity of the system to changes in the magnitudes of its variables and to changes in relationships among the variables can be observed. Critical variables and significant relationships can be confirmed or rejected. Factors having negligible influence on final outputs can be identified. The impact of current policies on future system behavior as well as the influence of potential policies can be tested. The model can be used to answer "what if" questions of two types: (a) "what if we set the values of the critical and controllable parameters at certain levels? (b) What if certain variables which are not very controllable take on certain values?"

4. The nature of various risks may be clarified, and adequate and inadequate options for minimizing risks may be delineated by the simulation model. Thus, policies may be formulated with more knowledge of the risks they entail.

5. Simulation may be used as an educational device for teaching both policymakers and technicians. Analysis skills can be developed by stimulating rational thinking with respect to systems.

6. The development and implementation of simulation models may lead to more "open" communications regarding the system among all interested parties. Different points of view are frequently uncovered and agreements and disagreements focused more sharply.

Simulation models are also subject to a number of sources of error.

Some major limitations that have been mentioned with respect to simulation models are: 61/

1. Simplification of the real system. -- A simulation model is always a simplification of the real system it represents. This simplification takes place in many ways -- by making assumptions, by including only the critical variables in the model, by incorporating only the most important relationships in the model, and by other methods. There is always danger, however, that oversimplification or inaccurate simplification may occur.
2. Dynamic behavior of the real system. -- Every system contains a certain degree of random and uncertain behavior, exhibits delays and has a number of nonlinear relationships among its variables. One can't be sure how many of these dynamic factors can be excluded from a model and still have a valid representation.
3. Data collection. -- A simulation model needs data in order to assign values to its variables and parameters. Sometimes the required data is available in the correct form. When such data is unavailable the model-builder has to obtain the necessary values through empirical studies, from actual events and by educated guesses. Regardless of how obtained, the reliability and validity of data should never be taken for granted.
4. Intangible factors. -- All systems contain intangibles such as political opinions, and other human attitudes and values. These are difficult -- if not impossible -- to incorporate directly into the simulation model. Usually, the model includes intangibles indirectly by such techniques as increasing or decreasing the values of certain variables over time, by incorporating more or fewer time delays, by strengthening or weakening particular relationships, and similar ways. The modeler, is rarely, if ever sure that this implicit treatment of political and human factors is realistic and accurate.
5. Experimentation. -- Experimentation is the process of designing sets of computer runs to determine the sensitivity of a simulation model to potential changes in system variables, assumptions and relationships. A great deal of experimentation can be performed or very little of it. Further, it can be done efficiently or inefficiently. However, no standard techniques exist for insuring that experimentation is done completely and efficiently on large-scale complex simulation models.

61/ Ibid., p. 35-36.

6. Practical considerations. --- In developing and implementing simulations, there are a number of practical considerations to contend with. These include such items as available time on the computer, deadlines as to when the results are needed, adequacy of the computer facilities to be used, availability of required numbers and types of skills, and so on. Rarely does one have enough of these items. If one is forced to make "tradeoffs" among these items, the risk of error is increased.

Because a computer simulation model is only an approximation to the real system, the validity of the results obtained by using it should always be tested. All computer simulation models thus require modifications over time to improve their validity.

Illustrations of the Method

Computer simulation modeling has been applied to the physical environment, social systems, military situations and economies. One illustration of this method in the field of agriculture is the National Interregional Agricultural Projections (NIRAP) System. 62/ NIRAP is a computerized system of related models (equations) of the food and fiber system of U.S. Agriculture. This model has the capability to simulate alternative futures for food and fiber based on scenarios which differ with respect to major uncertainties of impact on the food and fiber system and with respect to policy decisions designed to alleviate anticipated system problems. The economic projections produced by the model delineate a range of possible adjustment paths, provide an early warning of potential difficulties and provide feasible solutions to potential food and fiber problems. NIRAP has been under development by the Economic Research Service of the Department of Agriculture. Each year the capability of NIRAP has expanded.

62/

Quance, LeRoy, compiler. Introduction to the Economics Projections Program. National Economic Analysis Division, Economic Research Service, Washington, D.C. Feb. 19, 1975.

The present form of NIRAP is depicted in Figure XIII with each box representing a sub-system or module of the system.

a) The Scenario Development module assigns values for rate of population, GNP and inflation growth in the general economy; high, low or baseline agricultural exports; the rate of growth in public expenditures for research with extensions to agriculture; unprecedented technologies expected to affect agriculture; extent to which Conservation Needs Inventory land classes are converted to cropland and the amount of new irrigation development this would require; and finally extrapolated trends or stringent environmental constraints.

b) The Technological Change module projects the productivity index at the national and regional level for farm output, crops and livestock aggregates.

c) The World Trade module generates constant price commodity export projections and export demand price elasticities.

d) The General Economy module consists of the scenario provided national population, GNP and inflation growth rates; a regression based relationship between GNP and personal disposable income; calculations of per capita disposable income; and an inflation rate based on calculations paid by farmers..

e) The Aggregate Farm Output module projects the variables of prices paid and received by farmers, the parity ratio, quantity supplied, quantity demanded and diversions (if a price or income diversion policy alternative is specified), gross farm income, production costs and net farm income.

f) The Constant Price Commodity Demand module provides constant price projections of the import, export, per capita consumption, food

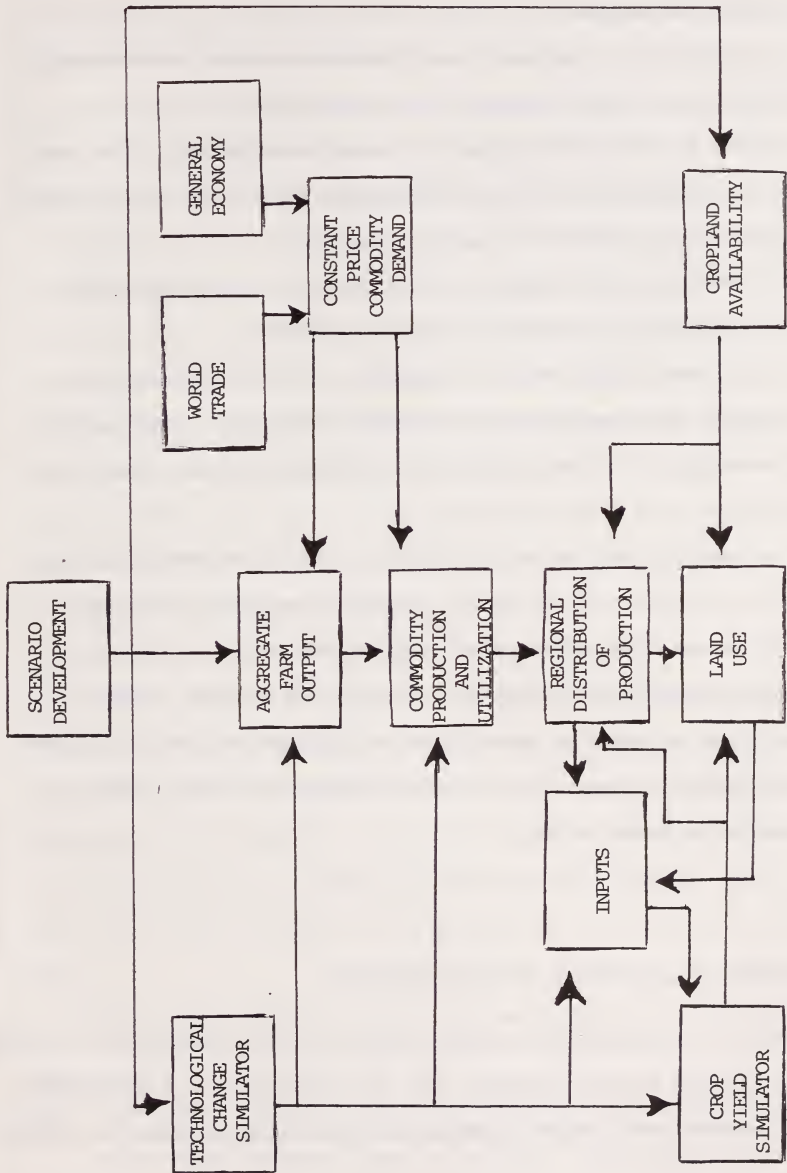


Figure XIII: The NIRAP System Model

use and feed use demand.

g) The Commodity Production and Utilization module projects equilibrium prices and quantities of 21 farm commodities.

h) The Inputs module projects the total amount of fertilizer used on each major crop and in producing aggregate farm output and estimates the quantities of diesel fuel and gasoline used.

i) The Crop Yield Simulator module projects crop yields at the state level for irrigated and nonirrigated practices.

j) The Crop Yield Availability module calculates additions to the croplands base due to private and public development, subtractions from the cropland base due to population related competing demand for land.

k) Regional Distribution of Production module estimates the crop production potential for the nation as well as each state and region.

l) The Land Use module calculates cropland use by irrigated and nonirrigated practices at the state, regional and national levels. Idle cropland is allocated nonirrigated cropland and allowances are made for crop failure, summer fallow, cropland pasture and other crops not included in the NIRAP system.

Applications of the Method to Public Agencies

While it is impossible to predict exactly how the results of a computer simulation model become integrated into the perspective of a policymaker, we can say that such a model is being used when the policymaker introduces

changes to its inputs and the model outputs become important -- in an operational sense -- to the formulation of policy.

The NIRAP model is being used for generating the agricultural projections in periodic revisions of the "Obers Projections: Regional Economic Activity in the U.S." 63/These projections are part of a program sponsored by the U.S. Water Resources Council and have been developed cooperatively by the Bureau of Economic Analysis, U.S. Department of Commerce (formerly the Office of Business Economics) and the Economic Research Service of the U.S. Department of Agriculture. These projections help evaluate the need for future water and land resources. They are being used by the U.S. Army Corps of Engineers, the U.S. Department of Transportation to evaluate potential costs and benefits stemming from the development of long-term capital investments such as transportation, storage and manufacturing facilities.

Another simulation model called the Strategic Environmental Assessment System (SEAS) has been developed and used by the U.S. Environmental Protection Agency for developing the 1975 cost of clean air and clean water at the request of Congress. It has also been used by the National Commission on Water Quality, a two year commission set up to estimate independently the cost of complying with the Water Pollution Control Act. Specifically, they used SEAS to get feedback of water pollution control costs.

Still another simulation model, the Macro-economic Growth model,

63/ 1972 Obers Projections Regional Economic Activity in the U.S. Series E Population Supplement. Agricultural Projections, Vols. 1, 3, and 4. U.S. Water Resources Council, May 1975: Washington, D.C. 139 p.

developed by Data Research, Inc., has been used by the U.S. Treasury Department to assess the impact of tariffs and the impact of price regulation on energy use in general and energy use in particular. They have analyzed the possibility of reducing energy import dependence.

A simulation model entitled Coal I has been developed by Dennis Meadows and others at Dartmouth College and used by the U.S. Geological Survey to stress the importance of coal as a long-range energy source and to indicate the necessity for understanding the social and environmental impact of coal to the Western nations. As a concrete response they have undertaken a research project on the environmental impacts of coal on the Powder River Basin. The Energy Research and Development Administration has given almost one-half million dollars to disaggregate the model so that its fossil fuel division can use it to choose among alternative technical programs.

Major Literature Describing the Method

- Barton, Richard E. A primer on simulation and gaming.
Engelwood Cliffs, N.J., Prentice Hall, Inc. [1970] 239 p.
- Enshoff, James, R. and R.L. Sisson. Design and use of computer simulation models. New York, The Macmillan Co. [1970] 302 p.
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- Hudson, Edward A. and Dale W. Jorgenson. U.S. energy policy and economic growth, 1975-2000. The Bell Journal of Economics and Management Science, v. 5, autumn 1974: 461-514.
- Johnson, J. Econometric methods. New York, McGraw Hill [1972] 437 p.
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- Meadows, Dennis L. and others. Dynamics of growth in a finite world. Cambridge, Mass., Wright-Allen Press, Inc. [1974] 347 p.
- Naill, Roger F. and others. The transition to coal. Technology Review, v. 78, Oct./Nov. 1975: 18-29.
- Quance, LeRoy, compiler. Introduction to the economics projections program. No. LQ2.75. In Economic projections and analysis systems programs. Washington, D.C., National Economic Analysis Division, Economic Research Service. February 19, 1975.

METHODOLOGICAL ANNEX

Delphi

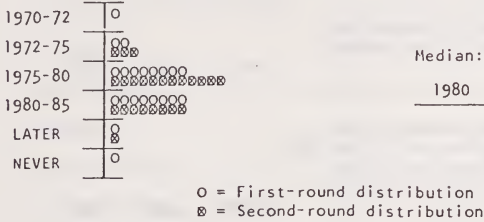
The first figure is another example of a Delphi. In this study the participants were asked to estimate the year when the likelihood of a particular event would reach 50 percent. They also were asked to estimate the latest year of occurrence depending on the social, economic, and political environment. This information should provide the analyst with insight as to whether or not the likelihood of the occurrence of the event will increase or decrease over time.

The second and third figures illustrate how the final results of a Delphi investigation might be "coordinated" for use by the policy maker or reader who does not need to see the questionnaire.

A DELPHI QUESTIONNAIRE

OUTPATIENT AND INPATIENT MONITORING SYSTEMS: Automated monitoring (by most of the largest health centers) of patient symptoms through radio or wire (telephone line) transmission of heart rate, respiratory rate, and blood pressure indicators.

PANEL'S ESTIMATES OF YEAR AT WHICH LIKELIHOOD
OF OCCURRENCE WILL FIRST REACH 50%



PANEL'S MEDIAN ESTIMATES OF EARLIEST
AND LATEST YEARS OF OCCURRENCE
DEPENDING ON THE SOCIAL, ECONOMIC,
AND POLITICAL ENVIRONMENT

As early as 1980

or

As late as 1990

SOME FACTORS FOSTERING IMPLEMENTATION ARE:

- . shortage of doctors
- . growth of local clinics, which can be linked to diagnosis centers; moreover, shortages of central diagnostic facilities make such organizations desirable
- . success of present pilot inpatient systems
- . large investment in R&D developing in this area

HOWEVER, THE IMPLEMENTATION OF THIS APPLICATION MAY DEPEND ON:

- . greatly expanded allocations of radio frequencies to the private sector
- . acceptance by medical profession
- . automatic measuring equipment connected to memory storage
- . elimination of computer downtime

AND MAY BE PRECLUDED BY:

- . lack of sufficient transmission channels for patients so monitored
- . relatively small number of patients requiring such close monitoring
- . unavailability of radio frequency channels from FCC for outpatient monitoring

Figure 1. Example Drawn from *On the Nature of Economic Losses Arising from Computer-Based Systems in the Next Fifteen Years*, by J. R. Salancik, Theodore J. Gordon, and Neale Adams, Institute for the Future, Report R-23, March 1972

V. RESULTS OF THE DELPHI STUDYA. TECHNOLOGICAL FORECASTS

	Median responses as to the year by which there is a probability of		
	10%	50%	90%
1. The introduction of non-fossil, fully synthetic hydrogen-based automotive fuels on a commercial scale.	1992	2010	2025
2. The first placing into operation of a commercial electric-power plant based on controlled thermo-nuclear fusion.	1991	2010	2025
3. The year by which there will be a technological breakthrough leading to the introduction of portable high- <u>energy</u> -density sources of electricity that are acceptable with respect to cost, safety, and user convenience.	1981	1989	1998
4. The year by which there will be a technological breakthrough leading to the introduction of portable high- <u>power</u> -density sources of electricity that are acceptable with respect to cost, safety, and user convenience.	1985	1990	1998
5. A technological breakthrough leading to the commercial production of synthetic food.	1980	1990	2000
6. The issuance of strict and enforceable federal regulations that reduce air- and water-pollution by at least 50% compared to 1974 standards.	1985	1993	2000
7. The year by which the daily production of oil from shale in the United States will begin to exceed 250,000 barrels.	1982	1990	1995
	Median Estimate for the Year		
	1975	1985	1995
8. The percentage of U.S. electricity generated through atomic fission in the years 1975, 1985, and 1995.	8	25	40

O'Toole, James. Energy and Social Change; Draft Report of the Twenty Year Forecast Project. Los Angeles, Calif., Center for Futures Research, Graduate School of Business Administration, University of Southern California. October 1975. p. 163.

The panel was asked the probability of a redistribution of power and status resulting in the emergence of a new elite under the assumption of (a) energy scarcity and (b) energy abundance. Listed below are groups that might emerge as new elites, with the panel's opinion, under each of the assumptions, about the degree to which the power and status of these groups would be:

strongly diminished	(-2)
slightly diminished	(-1)
essentially unchanged	(0)
slightly enhanced	(+1)
strongly enhanced	(+2)

CANDIDATES FOR A NEW ELITE	(a) Energy Scarcity	(b) Energy Abundance
BIG BUSINESS	0*	0*
SMALL BUSINESS	0	0
SCIENTISTS	1 1/2	0
BLACK-MARKETEERS	1	-1 1/4
NATIONAL ECONOMIC PLANNERS	2	0
TECHNOLOGISTS	2	0
OIL-EXPORTING NATIONS	2	-2 -
COAL- AND NUCLEAR-BASED UTILITIES	2	- 1/4
POLITICAL ACTIVISTS	1	0
ECONOMISTS	1/2	0
INTERNATIONAL BANKERS	1*	0*
ENVIRONMENTAL SPECIALISTS	-1	1 1/2
CONSUMERIST POLITICIANS	1*	1/4*
INTELLECTUALS GENERALLY	0	0
BUREAUCRATS IN CONTROL OF ALLOCATIONS	2	-1

* No consensus reached on these items.

Trend Impact Analysis

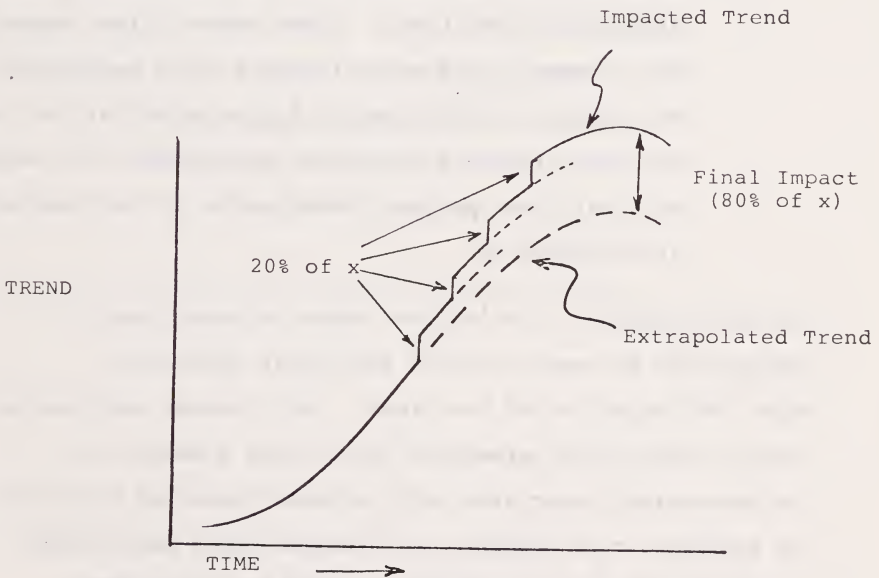
To facilitate the reader's review of some of the steps in preparing a Trend Impact Analysis (TIA), some of the finer detail was omitted from the main text. It is provided below.

Steps in Preparing TIA.

1. Identifying possible events which might cause some change in the path of the trend.
2. Estimating the chances that each event will happen.
3. Estimating the impact of each event on the trend.
The impacts of each event must be described in detail, including the amount, timing and shape of the impact. (See sample impacts.)
4. Calculating the total impact of all events by letting each event "happen" each year according to its chances of happening. For example, an event having a 10% chance of happening in the first year would contribute 10% of its impact in each subsequent year to the total impact of all events. Thus, if its impact is +30% after two years, it contributes +3% to the total impact in the second year.

Since some events may have lasting impacts, they may con-

tribute to the impact in all years based on their chances of happening in the first year. When the first year's contribution has been calculated for each event and added to the total impact in each year, the process is repeated for the second year, and so forth for all years. Impacts of counter-acting events are allowed to cancel each other. The contribution from one event is shown schematically below.

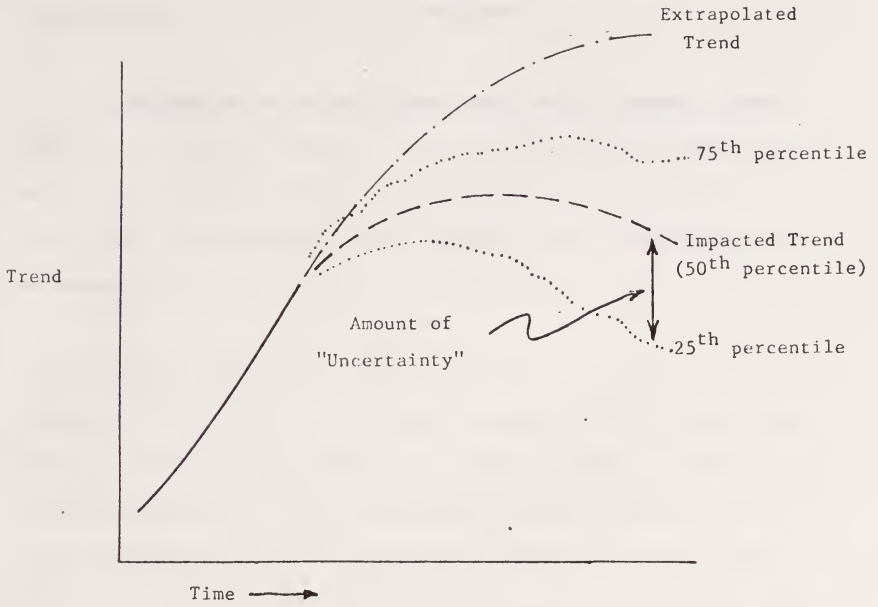


TIA Impact of One Event, with Impact of $+x\%$ and 80% Chance of Happening During 4 Years

The sample event has a 80% chance of happening by 1980 or 20% chance in each of the next four years. The impact of the event is to increase the trend by $x\%$. Thus, in the first year, 20% of the event happens, increasing the trend by 20% of x . In each of the next 3 years, the trend is increased by an additional 20% until 80% of the event has happened. This process is repeated for all other events to produce the total impacts of all events in each year.

5. Changing the extrapolated trend in each year by the total impacts calculated above to determine the new direction of the trend. Since events either happen or don't happen, this event-impacted trend represents the average of all possible future paths for the trend. The event-impacted projection is like the 50th percentile with half the possible future paths of the trend above it and below it.

The data compiled in the various steps in trend impact analysis can be used to obtain additional information about the projection of the trend. The standard deviation or similar statistical parameters can provide a measure of the uncertainty associated with the event-impacted projection. For example, it is possible to calculate other percentiles. Usually the 25 and 75 percentile ranges are calculated. The distance between these percentile ranges and the event-impacted projection indicates the amount of uncertainty associated with the projection.



Sample Result of Trend Impact Analysis Showing Uncertainty

APPENDIX

SOME FORECASTS THAT HAVE NOT COME TRUE: FORTUNATELY

Introduction

Throughout history numerous predictions have been made concerning scientific innovations, territorial expansion and the like. In hindsight, many of these can be viewed with amusement.

This appendix contains a small sampling of some of the more amusing predictions. Some are based on what was then current knowledge and others are simply remarks made without thorough analysis. To state that Jupiter's moons do not exist because they would serve no purpose for earth (see page) can hardly be called a prediction. Similarly, to say there is no land on the opposite side of the globe from Spain "because Saint Augustine says so" (see page) is not a prediction either. More akin to the futures forecasting that goes on today would be the prophecy of a "nation of madmen" (see page) made in 1910. Science has long been a prediction-shattering field because new physical laws are being discovered every year. If one relies on current

Many of the quotes are adapted from a 1969 paper by Nancy Gamarra entitled "Erroneous Predictions and Negative Comments Concerning Exploration, Territorial Expansion, Scientific and Technological Development; Selected Statements", published by the Legislative Reference Service of the Library of Congress.

knowledge and "reasonable" extrapolations of that knowledge, it is easy to scoff at suggestions of interstellar spaceships and space colonies in the next century, just as so many scoffed at landing men on the Moon.

The following examples are offered to provide a perspective for futures forecasting in a more systematic fashion.

A. TERRITORIAL EXPANSION

Perhaps one of the better future forecasters was Christopher Columbus, without whom America might not be what it is today. He was finally able to sell his "round world" idea to the Spanish government, but it was over the objections of the committee that concluded the following in 1486:

"(1) A voyage to Asia would require three years. (2) The Western Ocean is infinite and perhaps unnavigable. (3) If he reached the Antipodes (the land on the other side of the globe from Europe) he could not get back. (4) There are no Antipodes because the greater part of the globe is covered with water, and because Saint Augustine says so.... (5) Of the five zones, only three are habitable. (6) So many centuries after the Creation it was unlikely that anyone could find hitherto unknown lands of any value."

Morison, Samuel E. Admiral of the Ocean Sea, a Life of Christopher Columbus. Boston, Little, Brown [1942] p. 97-98.

There was also opposition to exploring the rest of this continent and acquiring new lands as part of America. On the Louisiana Purchase:

"The vast and unmanageable extent which the accession of Louisiana will give to the United States; the consequent dispersion of our population, and the destruction of that balance which it is so important to maintain between the Eastern and Western States, threaten, at no very distant day, the subversion of our Union."

Statement of Representative Roger Griswold. Annals of Congress, 8th Congress, 1st session, 1803-1804. p. 466.

"He did, however, fear those consequences; he feared the effects of the vast extent of our empire; he feared the effects of the increased value of labor, the decrease in the value of lands and the influence of climate upon our citizens who should migrate

thither. He did fear ... that this Eden of the New World would prove a cemetery for the bodies of our citizens."

Statement of Representative Thomas Griffin. Annals of Congress, 8th Congress, 1st session, 1803-1804. p. 443.

The acquisition of Alaska did not fare any better:

"(There is) no excuse for the unauthorized and unwarrantable action of the Secretary of State."

"Who gave him the right to squander millions of the money of the people at this time of general financial distress, and to so complicate us with a foreign power that it was urged as an excuse why the treaty should be ratified that we would offend Russia if we did not? ... If necessary to purchase the friendship of Russia in this way we shall next be told that to preserve the friendship of England or France we must buy some of their worthless possessions, ..."

Statements of Representative Cadwalader C. Washburn. Congressional Globe, 40th Congress, 2nd session, 1868. p. 136-138.

"In support of the proposition of the utter worthlessness of this territory there are several general tests of a most important and convincing character. Conclusive proof of it is that Russia would sell her territory... If it was not valuable to her, it will never prove of any value to us. Russia is not a Power to surrender a foothold upon earth unless it should be an actual and annoying burden to her."

Statement of Representative John A. Peters. Congressional Globe, 40th Congress, 2nd session, 1868. p. 3668-3669.

B. SOCIETY

In an age where dire predictions are common about the inevitable decline of our civilization, it may be of some comfort to read these comments that did not, most would agree, reach fruition:

"I thank God there are no free schools, nor printing, and I hope we shall not have them these hundred years; for learning has brought disobedience and heresy and sects into the world,

and printing has divulged them and libels against the best government."

Governor William Berkeley(Virginia), 1670. In Simons, A.N. Social Forces in American History. New York [1911] p. 47-48.

"We are gradually approaching, with the decadence of youth, a near proximity to a nation of madmen. By comparing the lunacy statistics of 1809 with those of 1909 ... an insane world is looked forward to by me with a certainty in the not far distant future."

Forbes, Winslow, M.D. 1910. In Woods, Ralph L. Prophets Can Be Right and Prophets Can Be Wrong. American Legion Magazine, Oct. 1966: 29.

C. RAILWAY TRANSPORTATION

In a day when there is much controversy over the environmental effects of certain types of transportation, it might serve a purpose to consider the arguments against railway transportation when that was a new system.

"In Germany, it was proven by experts that if trains went at the frightful speed of 15 miles an hour on the proposed Rothschild railroads, blood would spurt from the travelers' noses, mouths and ears, and also that the passengers would suffocate going through tunnels."

Cirti, E.C. Das Haus Rothschild in der Zeit seiner Blute, 1830-1871. Leipzig, 1928. Translated by Lunn, Brian and Beatrix as Reign of the House of Rothschild. New York [1928] p. 77 and 94.

"It was decided that its formation would prevent cows grazing and hens laying. The poisoned air from the locomotives would

kill birds as they flew over them, and render the preservation of pheasants and foxes no longer possible. Householders adjoining the projected line were told that their houses would be burnt up by the fire thrown from the engine chimneys, while the air around would be polluted by clouds of smoke... Boilers would burst and blow passengers to atoms. But there was always this consolation to wind up with -- that the weight of the locomotive would completely prevent its moving, and that railways, even if made, could never be worked by steam-power."

On introduction of a bill to Parliament for construction of a railway between Liverpool and Manchester, England in 1825. Smiles, Samuel. The Life of George Stephenson, Railway Engineer. Columbus, Ohio, Follett, Foster and Co. [1859] p. 205.

D. SCIENTIFIC INSTITUTIONS

Two of the best tourist attractions in the Nation's capital are the National Zoo and the Smithsonian Institution. They are accepted as integral parts of Washington now, but when Congress was first asked to fund them, some questioned their utility. Concerning the zoo:

"I do not believe the American people, hundreds and thousands of whom are today without homes, ought to be taxed to afford shelter and erect homes for snakes, raccoons, opossums, bears and all the creeping and slimy things of the earth."

Remarks of Representative Snodgrass. Congressional Record, 52nd Congress, 1st session, 1892. p. 4238.

And on the Smithsonian:

"What do we care about stuffed snakes, alligators, and all such things? ... Here is an appropriation of \$6,000 for a most worthless purpose, ..."

Remarks of Senator Simon Cameron. In Rhees, William Jones. The Smithsonian Institution; Documents Relative to its Origin and History. Smithsonian Miscellaneous Collections, V. XLII. Washington, U.S. Govt. Print. Off., 1901. p. 623.

"I would like to know of what this Institution consists. I would like the gentleman from New York (Mr. Pruyn) or the gentleman from Vermont (Mr. Poland) to tell us how many of his constituents ever saw this Institution or ever will see it or ever will want to see it? It is enough to make any man or woman sick to visit that Institution. No one can expect to get any benefit from it."

Remarks of Representative Lewis Selye. Ibid., p. 672.

There was opposition to the U.S. Geological Survey when it was formed, also.

"What is paleontology? It is the science of ancient fossils. These fossiles or rocks are picked up by parties in the field, brought here, and investigated in the laboratories in Washington."

"In this manner scientists weave out eventually what they call the story of the rocks; thus they solve the problems of the past.... What practical use has the Government for paleontology? What function of the Government is carried on by means of paleontology? Not only has the Government no use for it as a government, but paleontological work is not even necessary to the proper construction of a geological map."

Statement of Representative Hilary A. Herbert. Congressional Record, May 18, 1892, 52nd Congress, 1st session. p. 4390.

E. MEDICINE AND HEALTH

With all the U.S. organizations set up to research disease and

protect the populace from potentially dangerous medications,
it may be hard to imagine a time when these quotes were made:

"It was argued that inoculation of the kind employed by Jenner (for smallpox) would produce a cow-like face; that those who have been vaccinated (the word 'vaccinate' is derived from the Latin vacca, a cow) would grow hairy and cough like cows..."

Butler, R.R. Scientific Discovery. London, English Universities Press [1947] p. 100.

"The abolishment of pain in surgery is a chimera. It is absurd to go on seeking it today. 'Knife' and 'pain' are two words in surgery that must forever be associated in the consciousness of the patient. To this compulsory combination we shall have to adjust ourselves."

Alfred Velpeau, surgeon, 1839, on anesthesia. In Gumpert, Martin. Trail-Blazers on Science. New York, Funk and Wagnalls [1936] p. 232.

"There cannot always be fresh fields of conquest by the knife... That we have already, if not quite, reached these final limits, there can be little question. The abdomen, the chest, and the brain will be forever shut from the intrusion of the wise and humane surgeon."

Sir John Erichsen, 1873. In Woods, Ralph L. Prophets Can be Right and Prophets Can Be Wrong. American Legion Magazine, Oct. 1966: 29.

"In the 1840s the bathtub was denounced in the United States as an epicurean innovation from England designed to corrupt the democratic simplicity of the Republic. The medical profession warned against it as a producer of rheumatic fevers, inflammatory lungs and all zymotic diseases."

New York Times, Nov. 21, 1926. Sec. VIII. 12:1.

F. THE ATOMIC BOMB

President Truman reported that he was told by Admiral William Leahy the following about the atom bomb:

"That is the biggest fool thing we have ever done.... The bomb will never go off, and I speak as an expert in explosives."

Truman, Harry S. Memoirs, Vol. I: Year of Decision. Garden City, Doubleday [1955] p. 11.

You can't be more succinct than that.

G. ELECTRICITY

Thomas Edison was one of those against electrical networks, and is quoted as stating:

"Just as certain as death, (George) Westinghouse will kill a customer within six months after he puts in a system of any size."

Blow, Michael. Men of Science and Inventions. New York, American Heritage [1961] p. 95.

He also wrote:

"My personal desire would be to prohibit entirely the use of alternating currents. They are unnecessary as they are dangerous.. I have always consistently opposed high-tension and alternating systems of electric lighting.... not only on account of danger, but because of their general unreliability and unsuitability for any general system of distribution."

Edison, Thomas A. The Dangers of Electric Lighting. North American Review, Nov. 1889: 632-633.

There were other negative voices as well:

"I do not think there is the slightest chance of its (electricity) competing, in a general way, with gas. There are defects about the electric light which, unless some essential change takes place, must entirely prevent its application to ordinary lighting purposes."

Remarks by Mr. Keates, Minutes of Evidence Taken Before the Select Committee on Lighting by Electricity. In Report from the Select Committee on Lighting by Electricity. London, House of Commons, 1879. p. 146.

H. ASTRONOMY

The field of astronomy, as well as other scientific areas, has been one of the primary victims of denouncement and persecution. The concept of Earth being the center of the universe was a hard one to change, and Giordano Bruno was burned as a heretic of Rome for supporting Copernican theory. Galileo, inventor of the telescope, did not fare very well either.

Galileo was summoned before the Inquisition of Rome and after deliberations rendered their unanimous decision as follows: "The first proposition, that the sun is the centre and does not revolve about the earth, is foolish, absurd, false in theology, and heretical, because expressly contrary to Holy Scripture"; and "in second proposition, that the earth is not the centre but revolves about the sun, is absurd, false in philosophy, and, from a theological point of view at least, opposed to the true faith."

White, Andrew D. A History of the Warfare of Science with Theology in Christendom. New York, Dover Publications [1960] (originally published in 1896), p. 137.

A less than scientific analysis of whether Jupiter had moons went as follows:

"Jupiter's moons are invisible to the naked eye, and therefore can have no influence on the earth, and therefore would be useless, and therefore do not exist."

Contemporaries of Galileo who followed the teachings of Aristotle.
 In Williams-Ellis, Amabel. Men Who Found Out. New York,
 Coward-McCann.[1930] p. 43.

I. AVIATION AND SPACE TRAVEL

On a par with astronomy in amount of ridicule and disbelief were the fields of aviation and space travel. These concepts were the realm of science fiction a mere 75 years ago, although they are now accepted by most (some people still think the moon landings were staged in Arizona, however).

Concerning Samuel Langley's airplane experiments shortly before the Wright Brothers' successful flight, the New York Times wrote:

"We hope that Professor Langley will not put his substantial greatness as a scientist in further peril by continuing to waste his time, and the money involved, in further airship experiments. Life is short, and he is capable of services to humanity incomparably greater than can be expected to result from trying to fly.... For students and investigators of the Langley type there are more useful experiments."

New York Times editorial page, Dec. 10, 1903.

On Robert Goddard's pioneering work in rocketry:

"That Professor Goddard with his 'chair' in Clark College and the countenancing of the Smithsonian Institution does not know the relation of action to reaction, and of the need to have something better than a vacuum against which to

react -- to say that would be absurd. Of course he only seems to lack the knowledge ladled out daily in high schools..."

New York Times editorial, Jan. 13, 1920.

As a point of interest, the Times ran a correction on that opinion as Apollo 11 headed for the moon:

"It is now definitely established that a rocket can function in a vacuum. The Times regrets the error."

New York Times editorial, July 17, 1969.

Before the successful flight of the airplane, there was great debate over whether the thing would fly, and if it did get up, how would it get down.

"And granting complete success, imagine the proud possessor of the aeroplane darting through the air at a speed of several hundred feet per second! It is the speed alone that sustains him. How is he ever going to stop? Once he slackens his speed, down he begins to fall. He may, indeed, increase the inclination of his aeroplane. Then he increases the resistance necessary to move it. Once he stops he falls a dead mass. How shall he reach the ground without destroying his delicate machinery?"

Newcomb, Simon. Outlook for the Flying Machine. The Independent, Oct. 22, 1903: 2511.

Even after the principles of air flight had been proven, there were scoffers who did not realize its future potential.

"The popular mind often pictures gigantic flying machines speeding across the Atlantic and carrying innumerable passengers in a way analagous to our modern steamships.... It seems safe to say that such ideas must be wholly visionary, and even if a machine would get across with one or two passengers the expense would be prohibitive to any but the capitalist who could own his own yacht."

Pickering, William H. (astronomer). In Clarke, Arthur C. Profiles of the Future. New York, Harper and Row [1962] p. 3-4.

The "popular mind" seemed to have a better grasp of the situation than the scientist in this case.

Even the military was lax in accepting the possibilities of Goddard's work. Witness the following letter from Brigadier General George H. Brett, Chief of Material, U.S. Army Air Corp to the father of American rocketry:

"The proposals as outlined in your letter...have been carefully reviewed.... While the Air Corps is deeply interested in the research work being carried out by your organization...it does not, at this time, feel justified in obligating further funds for basic jet propulsion research and experimentation...."

Lehman, Milton. This High Man, the Life of Robert H. Goddard. New York, Farrar, Strauss, and Co. [1963] p. 310.

The examples could continue endlessly, for our civilization has been one of choosing alternatives and forecasting consequences. It is hoped that the above exercise provided some entertainment, as well as a sense of perspective for dealing with the numerous choices that continuously have to be made. Futures forecasting can provide a framework within which to make those choices.



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